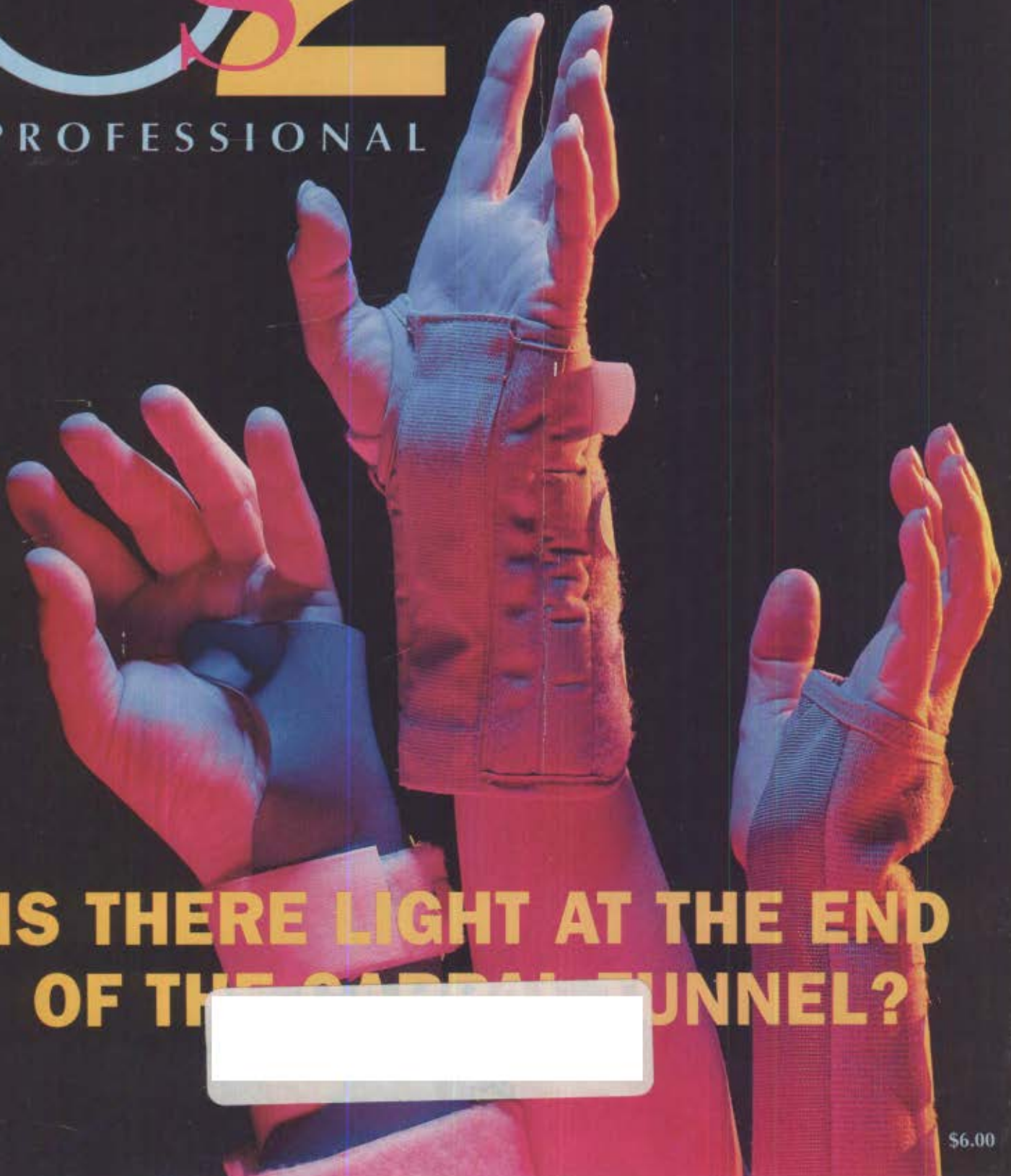


MARCH/APRIL 1993, VOLUME 1, NUMBER 2



PROFESSIONAL



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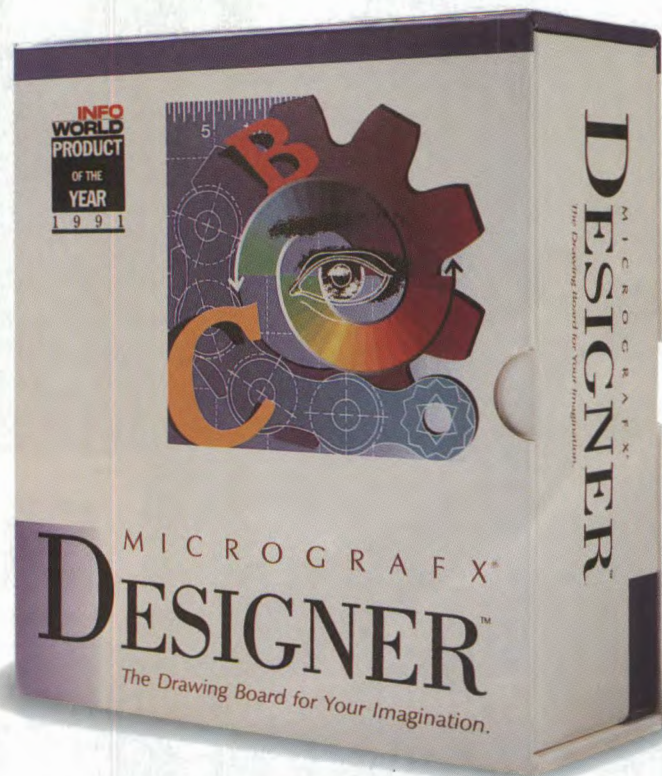
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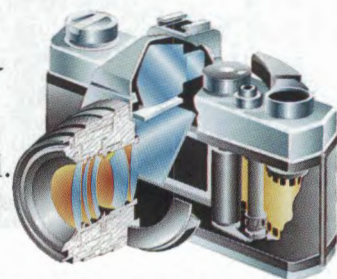


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Simplifying the programming of multimedia may help educators reach out to individuals the system previously considered "learning disabled." And beyond.

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COVER DESIGN: ELIZABETH BLACK, PHOTO: TOM REED



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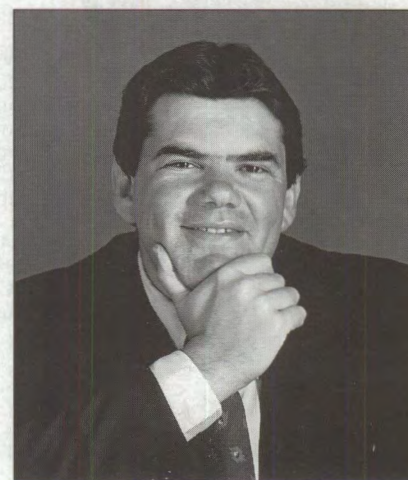
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[illegible]

The collage features several overlapping business documents. The most prominent is a purple and white cover for the 'M&B Marketing REPORT' titled 'Dramatic Increase in Sales!'. It includes a 'December Report' showing a 25% increase in sales and a 10% increase in profit. Below this, it lists 'January Results' and 'February Results'. To the left, a smaller document titled 'Marketing Survey in School' is visible, showing a table with columns for 'Surveyed', 'Response', and 'Comments'. Above the main report, a spreadsheet titled 'Marketing Survey in School' is partially visible, showing columns for 'Surveyed', 'Response', and 'Comments'. The background is a light blue grid pattern.

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CircuitChit Opening file.

32 bit
16 bit
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2000
1500
1000
500
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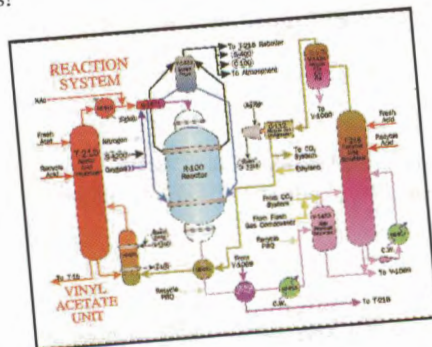
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OS/2

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The image shows a computer screen with a spreadsheet application. The spreadsheet is titled "Balloon Ride Sales Quarterly Results" and is for the year 1992. It displays a line graph comparing "Projected" and "Actual" sales data. The Y-axis is labeled "\$K" and ranges from 0 to 2.00 in increments of 0.20. The X-axis shows the months from February to August 1992. The "Projected" data is shown as a solid line, and the "Actual" data is shown as a line with balloon markers. The "Actual" data for the first quarter (Feb, Mar, Apr) is slightly below the "Projected" line, while for the second quarter (May, Jun, Jul, Aug), it is significantly higher, reaching approximately 1.80 in August.

Month	Projected (\$K)	Actual (\$K)
Feb 92	0.60	0.55
Mar 92	0.70	0.65
Apr 92	0.80	0.75
May 92	1.10	1.20
Jun 92	1.20	1.30
Jul 92	1.30	1.40
Aug 92	1.40	1.80



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Circle #5

PUBLISHER'S MEMO

The next few months will indeed be at once painful and prosperous for OS/2. Earlier this year, most informed leaders of the OS/2 community agreed that the coming two quarters would be a precious window of opportunity for IBM to secure the hearts and desktops of the multitudes yearning to multitask. Back in January, 2.1 was thought to be a late-March release. That didn't happen. And it hurt.

Not a few, especially developers marketing Windows applications, had pinned their corporate hopes on a Q2 release for 2.1. They savored the prospect of running more elegantly under 2.1 than under any existing Microsoft product. By late March, disappointed developers were returning thousands of dollars in presold orders they could not fill. One such developer told *OS/2 Professional* that he had lost so much money on 2.1's delay he had abandoned the OS/2 project altogether, and would stick with Windows. Fortunately, after some hard looks at the crumbling Windows desktop market, he reversed his decision and is now back in the OS/2 camp.

Users will also suffer because the enchanting benefits of 2.1, including important fixes and drivers, will be that much further down the road. Many CD-ROM players, and many multimedia programs are simply not ready for OS/2 until 2.1 ships.

When 2.1 really does ship—Lord, make it June for real—it will open a potential floodgate of new users. Millions of Windows users anxious for true preemptive multitasking, and for the faster, more elegant performance standards 2.1 purveys, will at last be able to turn on to OS/2. As they explore its power and joys, they will seek out native apps. More developers can then finally tap into that ocean of users they claim OS/2 never reached.

But there's a downside. For several quarters, the natives will be understandably restless. Why should anyone buy a box of DeScribe or Lotus 1-2-3 for OS/2 when they can continue to use Microsoft's Word for Windows or Excel for Windows? Hence, that same prosperity launching doorway has a painful arch through which native app developers must pass. It will hurt for a while, and loyal OS/2 developers will need support. Their stamina will be well worth it because OS/2 is still selling at about 100,000 per month and will one day become a global standard. Much of that continued growth does depend on 2.1, however. And that brings us to the late-March slip and subsequent problems with the 2.1 betas.

The slip could have—and should have—been devastating in view of the anticipated Microsoft offensive. But it seems the only thing more inept than IBM's proliferation of OS/2 is Microsoft's introduction of Windows NT. Microsoft now predicts a COMDEX-ish announcement and a who-knows ship date shortly thereafter. The Microsoft Bridge is up for sale again.

More than date fudging, Microsoft continues to edge off the desktop market. The latest pronouncements by Microsoft suggest that some 80 percent of PC users during the next two years will

not need the power that NT claims. Add the delays, the uncertainty, the slipping and flipping development cycles the likes of which OS/2 endured. NT indeed will be Not There for the average PC user in 1993 and probably 1994.

It's too soon to say that IBM won the war. The battle will surely degrade into a war of attrition that will only further distract and obstruct the multitasking community. But if IBM did win—and does win—it will be a historic commercial first. Because as we all know, it was not IBM's great marketing or organizational prowess that won the war. It was and is the frontline soldier, the enormously committed OS/2 user base.

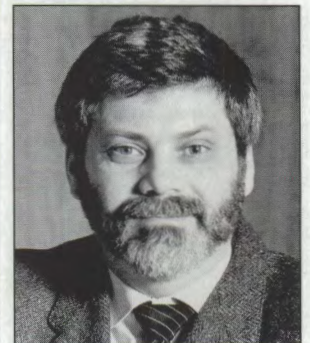
OS/2 devotees aren't called evangelists, gurus and fighter pilots for nothing. IBM concedes that no major corporation has ever received so much advice from the public on marketing and advertising. But it's understandable. What's a camel? New answer: a horse made by a marketing committee at IBM.

Do motorists write General Motors suggesting marketing programs for Chevrolets? Do television viewers send e-mail messages to Sony with promo ideas for VCRs? Of course not. One expects the company with a stake in the product to get its butt off the dime and perform the marketing miracles. But that hasn't happened.

So the task has fallen to the OS/2 community. Imagine if the frustrated, oft disappointed, oft misled user base would have simply gotten fed up and said, "Bye." Remember Beta VCRs? But we—the OS/2 soldiers—refuse to abandon the vision of next generation computing right now. We see *OS/2 Professional* as the new vanguard of that struggle. Our extraordinary growth—we are now one of the fastest growing magazines in America—is a virtual barometer of the growth of OS/2 users and apps. This issue, we proudly mail to 140,000 registered OS/2 users, and have already added all registered users in Canada and Singapore. Soon we will expand into other countries as we unite OS/2 users everywhere. Watch our pages. *OS/2 Professional* will be a fiercely independent voice for OS/2. If you have been fed up with the sweetheart computer media, stay tuned. You ain't seen nothing yet, folks.

The perseverance all of us show today will not be remembered years from now. We will be forgotten. Each of us—pioneer and prophet—is investing our physical and mental resources, not for personal recognition, but to make a better computing world where ordinary people will be personally powerful. If we succeed, the next generation will be completely unaware of this thing called OS/2, or the travail its early proliferators endured.

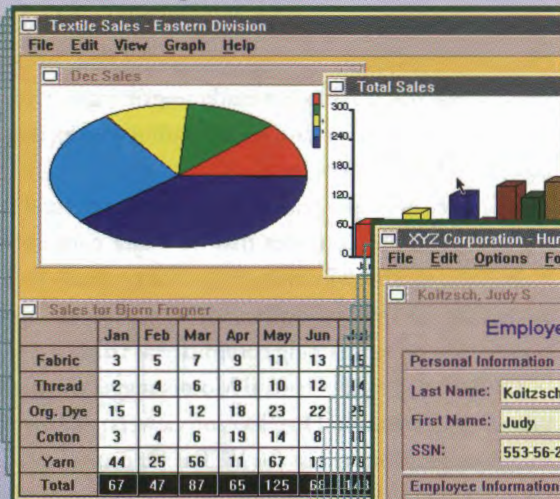
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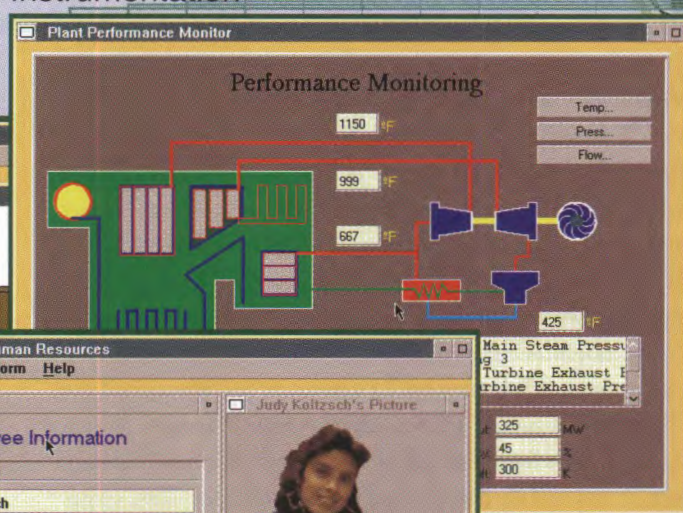
VISUAL PROGRAMMING for OS/2 Applications



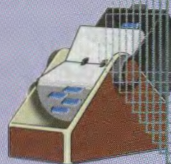
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Comments, criticisms and observations

Kudos, plaudits

Thank you very much for *OS/2 Professional*. After several months of using OS/2, and enduring the wisecracks from my associates for using it, I am elated to read such a pro-OS/2 publication. While some laugh at me as they wait for Windows NT, I have been quietly using the full power of my machine as the others dream of a yet-to-be delivered gift from the heavens. Oh well, they say that America was built on dreams, so maybe one day theirs may come true.

I have really enjoyed reading your publication and I look forward to many more.

Hal Doby
Snellville, GA

OS/2 Professional is wonderful! Informative! Next to OS/2 itself, nothing else has had anywhere near the impact on my productivity. Even your covers are delightful! I pray for your continued success.

Ray Harris
Allentown, PA

Enclosed is the application for continuing my subscription to *OS/2 Professional* magazine. It is difficult to express how much I appreciate your publication. The two copies I have received have provided more useful information about OS/2 than either *PC Magazine* or *BYTE* magazine have in the last year. Actually, *PC Magazine* is almost completely a MS Windows publication now. (When my subscription runs out this June I do not plan to re-new.) One of my favorite columnists, William Zachmann, just left *PC Magazine* and I had no idea where he was going. What a wonderful surprise to discover him at *OS/2 Professional*. Also, John Dvorak is one of my "must read" columns in your magazine. With these two men alone *OS/2 Professional* would be a good magazine. But with everything else you include, I believe *OS/2 Professional* will

become one of the premier publications in the computer industry.

Richard L. Swan
San Diego, CA

In search of threads

OS/2 has come a long way. From the introduction of version 2.0, the slick trades ridiculed the package. They have attacked everything from its 21 disks, to the change of desktop paradigm, to its lack of real programs...*PC Week's* February 8 issue, shows just how far one can go. Its writer suggested that the real problem with OS/2 was that the independent developers were simply porting their applications from Windows and were not taking advantage of OS/2 power. In particular, he bemoaned the inherent difficulties of writing multitasked programs.

Since I was unaware of the inherent difficulties of writing such multithreaded applications, I blindly undertook this daunting task and produced a program to support my astronomy hobby. Had I known how difficult this was, I would have never started. As it is, I have a program involving about 50,000 lines of code which works.

I do have some ideas to improve its efficiency, but that would require more threads. Now, though, I have the advice of an expert. I should rewrite the program to make use of a single thread, and, I suppose, port it to Windows.

Come on, people. I remember the experts who talked about the extreme difficulty writing code for Windows, too.

If we always relied on these experts, we would still be using Hollerith cards on IBM 407 accounting machines.

Cyrus B. Hall
Honolulu, HI

Coordinate dates

I agree wholeheartedly with your editorial comments in the January '93 issue about IBM's need for aggressive, intelligent marketing. In addition, coordination of the efforts of the various

IBM organizations is necessary.

One area where coordination is needed is made obvious by the folly of scheduling the OS/2 Technical Interchange the same week as SHARE 90 in San Francisco. Some of the biggest and most influential boosters of OS/2 come from IBM's large systems custom base, and most attend either SHARE or GUIDE. Not only do we have to choose which conference to attend (sorry, but SHARE wins hands down), but it means the organizers of the SHARE meeting don't have access to many of the best speakers for OS/2 sessions.

I hope that IBM does a better job of coordinating these meetings in the future.

Jamie Jemison
Long Beach, CA

More plaudits

I just finished browsing through an associate's copy of *OS/2 Professional*. A great idea whose time is long overdue. Now I no longer have to page through other magazines looking for the occasional OS/2 article scattered among DOS and Windows write-ups. And this is one time I've read every advertisement in a magazine. Keep up the good work.

Erik Dufek
St. Francis, WI

Thank you so much for Volume 1, Number 1 of *OS/2 Professional*. This is a "cover-to-cover" magazine in my book. I am a novice to OS/2, having just loaded version 2.0 about a month ago. This is a magazine that will really help us new kids on the block.

I understand the "experts" who get bored with novice information, but they must remember they too were once novices and devoured everything they found. I was that way with DOS, but now I scan all the tips and so forth, as mostly being too simple, but now and then I pick up a real jewel of a tip. Still, there are thousands out there everyday begging to learn. With the numbers of new OS/2 users quickly growing there is

continued on page 86

THIS *or* THIS?

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Circle #22



BYTES & PIECES

News and trivialities, important and obscure

Monthly and multinational

OS/2 Professional is going monthly effective its May issue. The magazine, which now reaches more than 135,000 registered OS/2 users in the United States, has taken the first step in becoming a global OS/2 magazine by adding readers in Canada and Singapore. All 10,000 Canadian users who have returned an OS/2 registration card will receive the current issue. In addition, Singapore registered users have been added. The magazine plans to intensify its Canadian readership and continue adding international distribution along the Pacific Rim throughout the year.

Eli Allen

Windows and OS/2 Conference change identity

The last Windows and OS/2 Conference held in January at the San Jose Convention Center rightfully signalled the death knell for its duomonikered approach. In an effort to revitalize the affair, it has been merged or attached to the Software Development conference and renamed "Business Software Solutions," according to a press representative for the conference. The fall show will still be held in August in Boston, but the winter show in San Jose has been moved from January to March.

Although both OS/2 and Windows reported seven-digit growth since the 1992 conference, the 1993 event lost

ground in terms of exhibitors and attendance. An estimated 15,500 pre-registered for the 1992 event, conference sources say, adding that less than 15,000 pre-registered for the 1993 event. An estimated 12,500 were actually on the floor in January 1993, the sources say.

OS/2 seemed the orphan of the last San Jose show, according to not a few OS/2 registrants. Windows exhibitors, who outnumbered OS/2 vendors, were busy saying "No" to OS/2 users eager for apps. Windows insignias were omnipresent in every session and in every corner. In contrast, OS/2 logos were seen mainly at the IBM exhibits. Imagine IBM vice president John Patrick holding a press conference about ferocious new plans to market OS/2, and everyone in the audience using conference-supplied notepads emblazoned "Windows."

Press relations seemed rocky as grumbling reporters struggled to get information about the event. Efforts to communicate with conference planners about OS/2 representation seem fruitless.

Miller-Freeman, which stages the shrinking event, concedes the split personality convention is "in trouble" in view of the increasingly diametric mindsets of Microsoft and IBM. While key IBM convention personnel interviewed in San Jose reflected impatience with the two-system event and have even suggested that IBM and OS/2 may greatly reduce its participation, indications are that

leading IBM officials now plan to support Business Software Solutions.

Although no one is saying it in so many words, the OS/2 Technical Interchanges that IBM itself stages seem to be far more effective than the Windows and OS/2 Conference in proliferating OS/2 and bringing vendors to users. The first real Interchange was held in Phoenix in February [see related story, which follows], and additional ones have been planned for Toronto in June, and Orlando in August. Indeed, the August extravaganza is scheduled just days after the Boston edition of Business Software Solutions. For many that will mean a serious choice. Many may well decide to go South.

Edwin Black



Phoenix wows 'em

Hundreds of people were turned away at the completely sold out OS/2 Technical Interchange held in February in Phoenix, marking the successful launch of a series of such events. More than just a tech-

nical exchange, the Interchange was a work hard, play hard in-gathering of more than 1,700 OS/2 users, evangelists and developers. *OS/2 Professional* was a leading cosponsor of the affair.

Held at the lavish Pointe Hilton at South Mountain, registrants were feted with sumptuous breakfasts, lunches and dinners each day. The final dinner was held at Rustler's Rooste, a chaotic cowboy-style barnyard saloon where hundreds of steaks smothered with beans were flopped onto platters as a Texas-Western band played. A lavish fireworks display concluded the evening.

Many registrants offered to pre-register for the next Interchange even before the date or site were announced. Interchanges may well become a major show force in the growth of OS/2.

Edwin Black

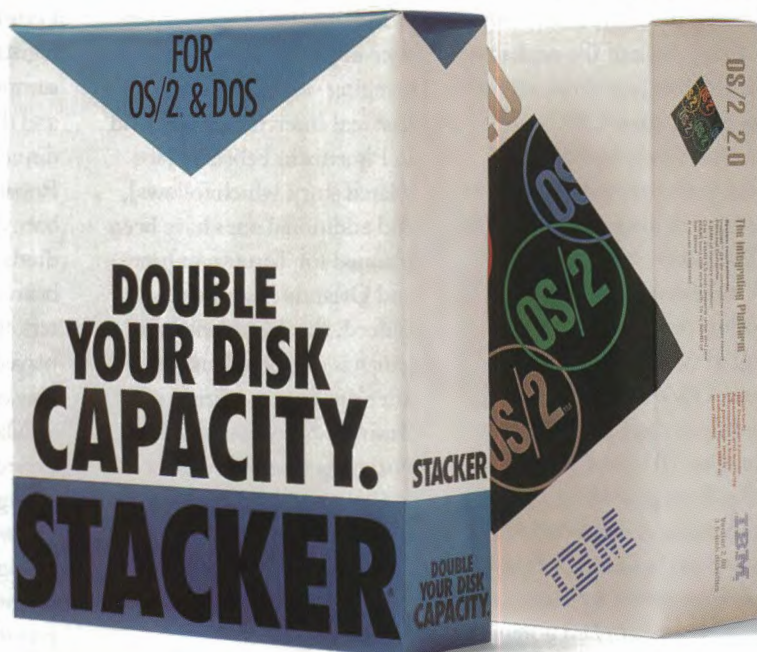
Caveat Beta Testers!

Beta testers are raving over the speed and performance of the new March 1993 OS/2 2.1 beta. At the same time, they are also ranting over a number of problems. In a bold attempt to combat problems with growing OS2.INI and OS2SYS.INI files, IBM has changed the .INI file structure of the March beta (technically known as 6.498G). OS/2 6.498G "knows" how to convert earlier .INIs to the new format. However, previous versions of OS/2 cannot yet convert the new format to the old format. Apparently, IBM

continued on page 33

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Circle #54

Seven Suggestions for Promoting OS/2

BY JOHN C. DVORAK

In a recent conversation with the makers of DeScribe, the nifty OS/2 word processor from DeScribe, Inc., in Sacramento, California, I discovered that the company was having trouble getting its product placed with retailers. I would assume that shelf-space considerations are not the only thing at work here. It's more than likely that companies such as Microsoft, WordPerfect and Lotus—all with hot Windows word processors—would tell a convincing tale as to why DeScribe should be kept off the shelves of the big retailers. While it's hard to find any word processor better than the newest Ami Pro, DeScribe is as good as WordPerfect for Windows and should have some shelf space for the benefit of the OS/2 customer.

IBM, of course, with machines all over the place in superstores and elsewhere, might want to do itself a favor and help companies like this out. What does IBM have to invest? Zip, that's what. All it needs to do is to mention it to its sales people when the sales people take more orders for more machines. Put in the good word. A cheap promotion. It doesn't hurt to promote the OS/2 cause. Then again IBM itself is bundling Windows with many of its low-end machines. There has to be some way to get around this dubious practice.

Now I see why Microsoft was so dead-set against the development of PM-Lite. It would have derailed the long-term Microsoft strategy to secretly develop Windows 3.X while stringing IBM along with OS/2.

To strengthen its market position here are some ideas IBM should consider:

1. ACQUIRE GEOWORKS. Fly to Berkeley and talk to Brian Dougherty at Geoworks. Buy the company and have it take its superstar assembly language coders and turn Geoworks into a compact Windows clone with the same hooks for program execution. Put a PM-lookalike front end on it and sell it as an entry-

level OS/2. It could run on anything. It would derail the Microsoft juggernaut.

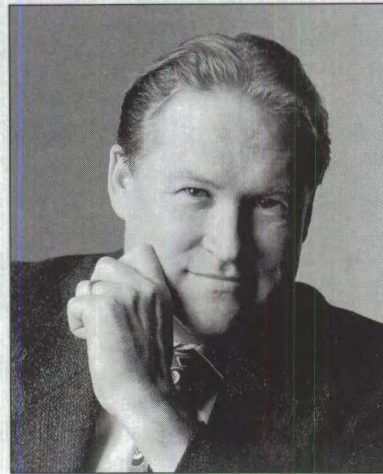
2. RETHINK THE ORIGINAL PM-LITE OR OS/2-LITE CONCEPT. Take out some of the whiz-bang features of OS/2 and sell it cheap as a lead-in to the full-blown system. Let's face it, OS/2 is so powerful that few of us have a clue as to what it can do and

won't miss many of its features.

3. MAKE A NEW DOS. Take the piece of OS/2 that merely runs DOS apps (the VDM portion) and recompile it with assembler subroutines after a thorough de-bottlenecking procedure. Sell it as a DOS replacement and call it DOS/2. Why is IBM still paying royalties for DOS to Microsoft when it has this hot code? It could be designed in such a way that a user could buy add-ins such as multitasking and a PM shell. I suppose it could even be built up into a full-blown OS/2.

4. THINK MODULAR. After September when Microsoft goes off in its own direction with Windows, and IBM is no longer married to IBM, IBM will have to consider debundling the WIN-OS/2 code from the OS/2 package. At some point in the future it will have to simply code its own version of Windows and sell it as an add-in. Hopefully OS/2 will be established enough by then to stand on its own without needing the lure of Windows compatibility. IBM knows this is the future and should be going from ISV to ISV and telling them that they should port to OS/2 asap. As it now stands the ISVs keep telling IBM that "we're Windows compatible and run under WIN-OS/2, so why should we port the product?" IBMers mutter things about 32-bit performance and the vendors roll their eyes—like THEY care! They're coding in C!!!

5. ACQUIRE NOVELL. IBM has to think about buying itself some markets instead of fighting with Microsoft. Buy Novell. If it doesn't want to make DOS/2 it can use the talented DRI programmers to



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DVORAK'S VIEW

chase Microsoft's DOS away. It will also capture an entire segment of business computing: Novell networking. Since the Federal Trade Commission is obviously going to do nothing about Microsoft's buying competitors left and right, what can it say if IBM goes back into an aggressive posture? In fact, let one of the Baby Blues do the purchasing. The Baby Blue moniker for the IBM spin-offs, by the way, has an interesting history since the Baby Blue was an add-in card for the original IBM PC which allowed the PC to run CP/M. It had a Z-80 on board and some code that allowed it to boot CP/M disks. It provided the transition needed for people to comfortably go from one platform to another without dislocation. Now, as a term it means kind of the same thing. A transition from old to new. A good sign.

6. PORT OS/2 TO THE RS/6000 NOW! That's it. No explanation needed.

7. PROMOTE THE USE OF THE 2.88 MEGABYTE 3½-INCH FLOPPY DISK. You can put a nice OS/2 boot disk together if you

use 2.88 meg disks. Why this drive hasn't become popular shows lack of leadership by the clone makers and the pundits too. This is the drive of choice!

Anyway, these are seven helpful ideas that IBM should consider. I hope they at least pass this column around the office. If nothing else, maybe some IBMers can help out the DeScribe folk. Let's make that item number 8! ♦

John C. Dvorak is a computer columnist for The San Francisco Examiner, PC Magazine, PC Computing, Microtimes and MacUser.

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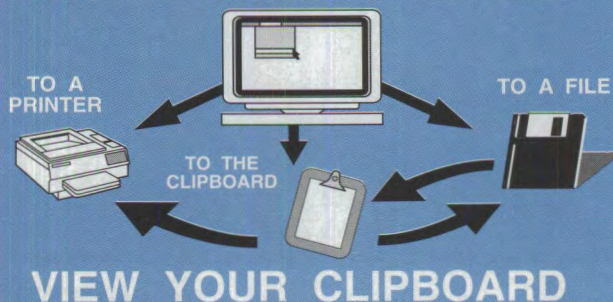
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OS/2 and Apple

BY WILLIAM F. ZACHMANN

A year and a half after its announcement, most users are still somewhat mystified by the technology alliance between Apple and IBM in general and what it means for OS/2 in particular. While more is known about the specifics of the alliance today, many users still don't see just how OS/2 fits into the picture.

The impending releases of OS/2 2.1 and of Windows NT (and the inevitably heightened rivalry between the two that will result) make this a good time to take a fresh look at the IBM/Apple alliance and its implications for OS/2.

IBM and Apple announced their broad technology alliance on October 2, 1991. It included closer cooperation in networking IBM and Apple systems; joint development of a new family of RISC-based microprocessors (PowerPC) and a new UNIX-derived operating system (PowerOpen); and two separate newly created joint ventures. One to develop multimedia technology and standards (Kaleida) and the other to build a future object-oriented operating system (Taligent).

Coming, as it did, barely six months after IBM's announcement of OS/2 2.0, three months before OS/2 2.0's originally promised ship date and six months before 2.0 actually shipped, the Apple/IBM announcement did little to encourage the notion that OS/2 was really a long-term strategic product for IBM, as OS/2's critics were quick to point out.

"How," they asked, "can IBM seriously promote OS/2 2.0 as a strategic operating system for the balance of the 1990s while planning, with Apple, to introduce not just one but in fact *two* entirely independent operating systems over the next few years?"

How, indeed? After all, neither the PowerOpen operating system nor the future object-oriented operating system to be developed by Taligent had (or has) any obvious relation to OS/2.

PowerOpen combines IBM's AIX and Apple's AUX, both derived from UNIX, and includes support for the graphical user interface presently found on the Apple Macintosh. Taligent is a radically new object-oriented operating system based upon Apple's "Pink" project. What on earth has OS/2 to do with any of this? Where does it fit in?

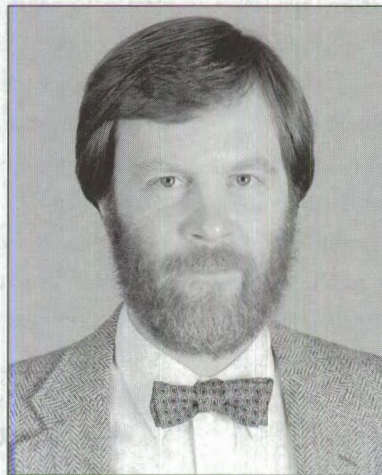
In one sense the most straightforward answer is simply that, for the most part, it doesn't. Just as IBM's PC-DOS systems don't really have much to do with or fit in with IBM's present RS/6000 systems running AIX, PowerOpen and OS/2 are different products aimed at different markets.

PowerOpen, from IBM's perspective, is essentially just a future version of AIX that will run on PowerPC systems (which are, in effect, future versions of the RS/6000), will run Macintosh software (in Motorola 68000 emulation mode) and will support the Mac GUI in addition to the X/Windows-based Motif GUI. It is aimed at the UNIX-oriented workstation market presently served by AIX and the RS/6000 rather than the IBM PC/PS market that is OS/2's primary target.

Taligent is an ambitious effort to create a brand new operating system that is object-oriented from the ground up. If it achieves all its objectives, the new Taligent operating system will eventually provide a complete replacement for "all of the above," from DOS right on through UNIX, OS/2, NT and the rest. It is a bold effort to create an entirely new operating system by mid-decade.

Is there an obvious contradiction between Taligent's grand aims and IBM's claim that OS/2 is a strategic operating system for the remainder of the 1990s? You bet there is. If Taligent is 100 percent successful in all respects, OS/2 will be rendered hopelessly obsolete by the latter half of the 1990s.

Aha! Does that not therefore show beyond a shadow of a doubt



ZACHMANN'S VIEW

that IBM cannot be sincere in its supposed commitment to OS/2? Does that prove that OS/2 is merely a temporary place holder for IBM that ought rightly to be ignored, nay shunned, by software developers? Does that not show that Bill Gates and Steve Ballmer and OS/2's other critics are right?

No. It doesn't. The key is in the conditional nature of the last sentence two paragraphs back: "If Taligent..." You see, if Taligent is 100 percent successful in all respects it won't just be OS/2 that is rendered hopelessly obsolete by the late '90s. NT, UNIX, Apple's System 7 and all the rest will be rendered hopelessly obsolete as well.

What, realistically, do you suppose the chances are that Taligent will meet such lofty goals? What do you suppose IBM's executives believe to be the chances that it will happen? How much do you think they are counting on Taligent to reach 100 percent of its objectives?

Not much, I'll bet. They know better. That is not to say IBM won't be happy to make use of Taligent's operating system, especially if it turns out to be the killer product that Taligent's very able and very talented staff hope to build. There are many ways, however, by which IBM can derive substantial benefits from the work at Taligent even if the results fall considerably short of the most ambitious goals that Taligent has set for itself.

The advanced research and development on object-oriented systems and software development that Taligent necessarily must accomplish in pursuit of its goals (like the parallel work on multimedia systems being done at the other IBM/Apple joint venture, Kaleida) will generate numerous opportunities to employ those technologies more immediately in existing products. Just such a technology exchange is, in fact, explicitly recognized in the business plans of both ventures.

The results of the work done at Taligent and Kaleida will first appear not as entirely new products from either venture but as capabilities implemented by IBM in OS/2 and AIX/PowerOpen and by Apple in AUX/PowerOpen and follow-ons to System 7. OS/2 2.0's Workplace Shell (WPS) and Systems Object Model (SOM) are, in fact, first steps in that direction.

What that is likely to mean in practice will be a gradual convergence, on a shared common ground, of object-oriented and multimedia enhancements not only to OS/2 but to AIX and Apple's AUX and System 7 as well. Taligent may very well produce, eventually, a new operating system that provides a common migration path for all four environments and more. Even if it does

not, however, users will benefit from shared object-oriented tools and multimedia capabilities as well as greater software portability and easier networking across all of IBM's and Apple's operating system and hardware platforms.

A new operating system from Taligent will not be a viable migration target for OS/2, AIX/AUX/PowerOpen or System 7 applications and users unless it can do everything those operating systems already do and more. Whether it does or not, though, spin-off technologies from the effort (as from those at Kaleida) will enhance the existing environments long before either venture achieves its most ambitious goals (and even if it never does).

Consider the history of the Xerox Palo Alto Research Center (PARC). Their work never did amount to much in the way of products from Xerox Corporation. Nevertheless, the seminal research and development work done at PARC in the late '70s and early '80s continues to provide ideas and technologies behind some of the most successful products in the industry (including both the Macintosh and Microsoft Windows).

Even if Taligent does not result in a totally new operating system before the end of the 1990s, it will still provide a rich source of new ideas and new technologies that IBM can incorporate into the further development of OS/2 and AIX for the remainder of the decade. I am quite sure that fact is very well understood by those at IBM who made the decision to enter into the joint venture with Apple in the first place, just as it is understood by their counterparts at Apple.

The result is that users of and developers for not only OS/2, but AIX, AUX and the Macintosh as well, now have not less but rather more assurance that the platforms they have chosen can be relied upon as viable platforms in the future. That may not be readily obvious on first glance, but as the decade progresses, I think it will become clear. ♦

William F. Zachmann, formerly a columnist with PC Magazine, PC World, PC Week, Computer World, and Info World, is a contributing editor of OS/2 Professional, and now hosts the Canopus Research Forum on Compuserve (GO cis:Canopus).

US/TOO

Gossip and Chip Talk

BY OSSIE SHTIYUM

GERSTNER WAS ALWAYS THE FRONTRUNNER

Despite weeks of prying, none of the media insiders and speculators had a clue that the man chosen to be IBM's new CEO was Louis V. Gerstner, chairman of RJR-Nabisco. More than 70 candidates were ultimately interviewed. But Gerstner was ironically the very first—and very last man—search committee head James Burke contacted about the position. At first, Gerstner said he was not interested. But that did not stop Burke from pursuing Gerstner and appealing to both his personal and patriotic instincts.

The first eleventh-hour leak went to the editors of *Business Week*, who bet the store and their prestige by putting Gerstner on their cover as IBM's new CEO and mailing the magazine before the announcement was even made. Shades of "Dewey Wins!"

One cynic asked what selling cigarettes, cookies and candies had to do with computers. Answer: if IBM can sell as many computers as Gerstner has sold cigarettes, cookies and candies—its troubles are over.

MICROGRAFX IN DISARRAY

Micrografx, the fallen darling of the OS/2 community, is trying to keep its head up high and its act together after the *Wall Street Journal* ran a report that the firm would chop 20 percent of its staff and reduce its budget by an equal level. Worse, the Texas-based firm revealed that criminal acts may have been committed at its Japanese unit. Trading of Micrografx' troubled stock was suspended just four minutes before the firm announced its fourth quarter chaos. Amid the problems, chief financial officer David Henkel resigned. And company officials began calling vendors trying to get out of contractual commitments to reduce operational costs.

WINDOWS NT CONTEST

IBM reps, the press corps and OS/2 vendors braved the "blizzard of the century" to attend the glittering *OS/2 Professional* gala celebration held at the beautifully renovated Union Station in Washington, D.C. on March 12. There, among caviar filled potatoes and peanut *satay*, the winner of *OS/2 Professional's* "Rename Windows NT" contest was unveiled. Eric Pinnell, president of software developer, CyberSim, won for "NEEDS

TRANSPUTERS." Dozens of entries received via fax and CompuServe, were adjudged by a panel comprised of *OS/2 Professional* columnists, contributors, and editors, Edwin Black, Bradley Kliever, John C. Dvorak, Wayne Rash and Karen Thomas.

Pinnell explained the new moniker. He thinks NT is a real hog and he jokes that it will need a transputer (extremely powerful RISC computer) to run. Pinnell now receives his prize, a full set of OS/2 books from IBM's Independent Vendor League.

Dave Whittle, IBM OS/2 advocate and founder of Team OS/2, thought the new name was amusing, "NT=Needs Transputers. I hope our friends in Redmond have a sense of humor," quipped Whittle.

Runners-up include: "Null Technology," "Nebbish Theatrics," and "OS2L8."

TRAPPED BY THE BLIZZARD OF '93

Speaking of the *OS/2 Professional* coming out party, this was one reception people will be talking about for years. The wine glasses started clicking Friday night. But not a few people were trapped by the snowstorm, unable to fly or train out until Monday or even Tuesday. IBM Independent Vendor Leaguers Melissa Robertson, Gail Ostrow and Dave Conklin couldn't fly out 'til Monday. Snowbound *OS/2 Pro* staffers were holed up in the home of editor Edwin and art director Elizabeth Black, alternating between bloodthirsty games of "Trivial Pursuit" and far-reaching planning sessions to extend the magazine's reach overseas.

The truth really comes out when you're trapped behind two feet of snow. The big surprise was how *tres chic* and sophisticated publicist and columnist Karen Thomas passed the time. You'd never guess it, but she was engrossed in playing Barbies with Rachel Black, the Black's eight-year-old daughter. When spied dressing Barbie in a glamorous wedding dress, Karen explained, "This is my favorite."

AKERS MEMO REVISITED

Dave Whittle, IBM's controversial Team OS/2 evangelist, read our last gossip column, and gave us this correction. He's not the one who leaked John Akers' infamous "hanging around the

continued on page 95

TERMINAL ILL

THE HEALTH HAZARDS OF COMP

BY JEFF LEVINE AND EDWIN BLACK

This article was delayed because our copy editor was out for several days. She's been an editor for many years, mostly using a red pencil and paper. Five years ago, she began using a computer part time. Last week she walked into a hospital for carpal tunnel surgery.

This article was further delayed because the art director is taking it slow these days. After 20 years in the business, she switched to computer graphics a few years ago, quickly developed carpal tunnel syndrome and had successful surgery. But now it's developing in the other wrist.

There's a point here. Too often we think of carpal tunnel syndrome—the most common repetitive strain injury (RSI)—as a blue collar or pink collar affliction of the pool secretary, or the telephone operator. True, that's how the malady became so well known throughout the working world. But today, the problem is quickly migrating through the ranks of the white collar community. And

soon, the syndrome will affect much of working America.

Clearly, the computer revolution—or shall we say its second revolution—is reaching even average executives and mid-level workers who years ago would not have dreamed of a CPU on their desks. At the same time, many programmers and power-users are suddenly discovering their wrists may be no more immune to the syndrome than the executive secretary's.

In the '70s and '80s, the problem was widespread. Today, carpal tunnel syndrome is epidemic. Within a few years, the disabling effects of this "terminal illness" may be considered a natural consequence of computer use. At that point, carpal tunnel syndrome could become the first plague of the Age of Information.

How bad is the problem? Carpal tunnel syndrome accounted for about half of the 284,000 occupational injuries reported in



NESS

UTER WORK

***It's an epidemic.
The pains and strains of constant
computer use are creating an explosion
of "terminal illnesses" for our
increasingly computerized society.
But there is help in sight.***

1989, according to the Bureau of Labor Statistics. That's up from some 27,000 cases in 1983. Indeed, surgery for carpal tunnel syndrome is the second most common surgical procedure in the nation. Many experts guesstimate from questionnaires that half of all carpal tunnel syndrome is not even reported.

Last year, computer use jumped from 80 million desktops worldwide to 130 million worldwide, mostly in America. Estimates are that another 50 million users may be added in 1993. Corporate America is facing a veritable explosion of carpal tunnel syndrome. Lost productivity, medical costs and employee claims are just the beginning. Moreover, the problem will afflict not only the clerical ranks, it will disable staffers all the way to the top.

Swelling, disabling, repairing

Why? Look at workstyles. Many executive secretaries are still at

keyboards morning until night. An executive secretary to a leading IBM official confirmed that she is at her terminal from seven each weekday morning until nine at night. She says she types 75 percent of the time because, "Everything is done on the computer. Letters, scheduling—all of it." She has no wrist brace or wrist rest.

Not a few programmers go into mental warp to pound out lines and lines code, hour after intense hour, until their caffeine wears off, or their strength wears thin. Writers are many times more prolific with computers than they were with typewriters. It's the same for graphic artists and engineers. Bookkeepers, financial analysts, attorneys and even doctors are suddenly finding themselves battling keyboards for extended periods of time. And don't forget the frenetic keystroking of e-mail sessions.

According to a variety of studies, including one at Stanford University, if you type 60 words per minute, you're banging the keys about 18,000 times an hour. The force adds up to between 25 and 27 tons of pressure in a



SPECIAL REPORT

work day. It's not just the force but the fact that the keyboard punching hand must leave the neutral position while handling that force. Problems set in when the hand flexes more than 20 degrees in either direction, according to Steven Tuck, MD, a leading carpal tunnel specialist practicing just outside Washington, D.C.

There's no way to tell just how much typing for how many years will result in carpal tunnel syndrome. Some day-and-night keyboard punchers will go for a lifetime and never develop the problem. Others may just selectively punch keys for a few years, and one day discover they have the syndrome.

Carpal tunnel syndrome is, of course, just the most common of several forms of repetitive strain injury. It occurs when some or all of the nine wrist tendons swell. That crowds the nearby median nerve. The resulting pain, tingling and numbness can be disabling. Whether or not you're a candidate for carpal tunnel syndrome depends on a spectrum of psychosocial, psychooccupational issues and, indeed, one's personal heredity and anatomical makeup. Individual reactions will vary greatly depending upon workstation, workstyle, the level and duration of repetitive action, the spatial relationships between the chair and the keyboard and many other job factors.

But off-job and recreational activities can play an equal if not more important role. Such activities as using vibrating power tools (e.g., lawnmowers or drills), playing violin, even tennis, can cause or advance the problem. Pregnancy and the hormonal changes it brings is an extremely common cause of carpal tunnel, as many new mothers will attest.

It would be naive to think the computer and the keyboard account for more than part of the causal story behind any individual's problem.

"It also depends on how large a tunnel you were born with," asserts Dr. Tuck. "Some people are born with a large tunnel, and they can abuse their wrists for a long time and never develop the condition. Other people with narrow tunnels can abuse their wrists a very short time and quickly see symptoms."

If splints or drug therapy fail to bring relief, surgery is recommended. But first, most reputable doctors will conduct a nerve conduction test to check symptoms against actual nerve damage. "The test will measure the rate at which the electronic impulse travels down the nerve," says Dr. Tuck. "If there is a 10 percent reduction, perhaps the problem will go away with therapy. If the reduction is 20 percent or more, surgery is needed."

The most common surgical method involves a very brief pro-

cedure, generally under an hour, in which the wrist ligament is cut precisely to allow more room in the carpal tunnel. A second and newer procedure is endoscopic release, or the use of a tiny television camera inserted into a half-inch incision in the wrist. Miniaturized blades do the cutting. This newer procedure may seem more hi-tech, but many orthopedic surgeons also consider it more risky in terms of fast recovery and successful correction of the syndrome. Several malpractice suits have resulted from this newer procedure.

Following traditional surgery, most patients are back at their jobs within a few days. Many can use their hands routinely within a week or so. But thousands find themselves off the job for weeks because of slow healing or complications, even after the conventional surgery. So carpal tunnel can put any staffer out of commission for an extended period of time. Most important, the syndrome can return periodically.

In Search of a Corporate Strategy

The problem has spawned an advocacy group, the Computer Injury Network. Founder Samantha Greenberg of Los Angeles is herself a victim of the computer age. She says even elbow surgery could not cure her disability which developed after prolonged stints on a computer.

"Four and a half years ago, most people thought I was crazy," says Greenberg. Now that the problem is getting more exposure, she feels vindicated. Greenberg says her mailing list is around 500.

Certainly any corporate strategy to limit carpal tunnel damage will have to take into account the potential for litigation. With some satisfaction, Greenberg observes the number of lawsuits against computer manufacturers for repetitive stress injuries has grown to about 300.

One important non-computer industry case was adjudicated last August when a Seattle jury awarded a former Boeing worker \$1.2 million after she lost the use of both hands. This is thought to be one of the first cases involving repetitive stress injury to have completed the jury process. The plaintiff did not use a computer. She operated a microfilm machine and was required to push a button thousands of times a day. The importance of such a damage award for computer-based forms of RSI is clear. Indeed, attorneys feel civil litigation in this area is at its infancy.

Ironically, business in general, and even the computer industry itself, has not developed a strategy for the expected near-term explosion in carpal tunnel syndrome. "Strategy? We have no strategy," quipped Ken Salaets, director of domestic policy for the

SPECIAL REPORT

Computer Business Equipment Manufacturers Association. "We're still really waiting for the science to play itself out." Salaets' remarks were similar to responses given by spokespeople at IBM, Apple and other leading firms which are concerned enough about the problem to fund research. The Center for Office Technology and the Health Research Foundation are just two examples of industry-funded organizations devoted to solving the problems. But currently no one has any answers.

Salaets confirms, "I myself have carpal tunnel syndrome in both hands. But I had it long before I was introduced to a VDT or a typewriter. My mother had it and my father had it. On the other hand, my wife has done heavy secretarial and clerical work for eons and has no problems whatsoever. No one understands all the reasons."

The Emotional X-factor

An emerging area of study in the whole RSI complex is emotional and job stress. Last year, the National Institute of Occupational Safety and Health studied directory assistance operators working for US West in Denver, Minneapolis and Phoenix. US West was selected precisely because the company had an outstanding record in terms of providing its workers a well-designed workplace. Yet 22 percent of the operators and six percent of the troubleshooters had repetitive stress problems as verified by visits to the doctor. Investigators found that emotional stress is an important factor in their physical injuries.

NIOSH researchers believe the fear of job loss in a competitive field contributed significantly to the physical injury rate. US West has already taken steps to alleviate its employee's anxiety, particularly through better corporate communications. Job anxiety is one factor that hits home throughout corporate America. Indeed, the computer industry itself is rife with employment fears. With 15 percent staff reductions at Borland, 20 percent at Micrografx and

with hundreds of thousands suddenly leaving their jobs at IBM—and the rest of the company worried about who's next—job anxiety may be considered at an all-time high in the computer industry. And it can only get worse.

Perhaps OS/2 users may find a useful emotional stress reduction in the very nature of multitasking. There are those who believe the OS/2 workstyle creates a less frantic user who is no longer in a panic to get back to the DOS prompt. The enhanced productivity and the easier computing style can have a real impact.

Solutions and Regulation

More tangible progress is now underway. Radical new segmented and angled keyboard designs along ergonomic principles are being marketed by Apple, KeyTronics and others. Wrist rests, freestanding and attached, are appearing with increasing frequency. Manufacturers and orthopedic experts say that such wrist rests can reduce risk of developing the syndrome because they help maintain the wrist in a more neutral position. For those who display

symptoms, a wrist brace, and there are many varieties, can either be prescribed by a doctor or purchased directly by an informed user.

OS/2 users may find their wrist needs have been anticipated with the new designer ergonomic OS/2 2.0 emblazoned mouse platforms produced by a Canadian company, Forminco, and marketed by IBM directly through a toll free number. This unique mouse pad, called the Mouse Arena, features not a wrist pad, which Forminco says

would actually increase pressure on the wrist, but a soft glove leather "palm rest." The special skid-resistant and lint-resistant Tyron surface of the Mouse Arena intensifies tracking, thus permitting far less extension and movement to achieve click-and-drag operations, the manufacturer claims.

Wrist rests and fancy keyboards are only part of the answer. Risk won't be reduced until better work habits and rest periods of a few



Forminco's ergonomic workstation. Photo: Alain Dancause.

SPECIAL REPORT

minutes every hour are instituted. Equally important are adjustments of the chair—and indeed the user's body in relation to the keyboard.

Codified efforts to determine exactly what may be needed have been launched by the Occupational Safety and Health Administration (OSHA). Last fall, it delivered its long-awaited advanced notice of proposed rulemaking on the subject of ergonomics, including computer workstations. Thus far, few have any idea what is cooking behind the closed doors of OSHA, or in the minds of congressional sources who are eager for standards to be initiated. But to date, OSHA hasn't even decided whether office workers will be included or excluded in a regulation that will surely extend to the meatpacking, construction and sewing industries, as well as computer users. Regulatory insiders don't expect the final rules to be published for years, so there will be plenty of time for debate.

In the meantime, one can only wonder about the advantages of object-oriented programming and RSI. If hours of coding can be circumvented by the object-oriented programming enabled by OS/2, programmers and developers might lessen their exposure to

the ravages of endless keystrokes. Indeed, object-oriented computing may lessen the harmful effects of repetitive keystrokes on the average user.

The Carpal Tunnel and VDTs

In a way, the "carpal tunnel" can be seen as more than a conduit of tendons and nerves in the wrist, but indeed a symbolic tunnel that all computer users now find themselves operating within. And they rightly wonder if there is indeed light peering in from the distance at the other end.

The wrist is only one part of the health risk facing computer users. From head to toe, the threats click off: eye strain, radiation problems, lumbar stresses, circulatory problems in the feet. The hazards compete for attention and solution.

VDTs, for example, have long stirred debate about radiation. Last fall, the controversy was rekindled by a Finnish study. It found that women working in front of older VDTs with strong magnetic fields have a miscarriage risk three times greater than those using terminals with lower-level fields. The study was immediately disputed, but it raises concerns that date back to the early '80s about



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SPECIAL REPORT

a possible link between VDTs and miscarriage. Inexplicable clusters of women with miscarriages have appeared at the *Toronto Star* in Canada and Sears in this country.

In 1991, the *New England Journal of Medicine* published what is regarded as the most thorough study of the issue. It included interviews with nearly 2,500 women telephone operators. The research compared those who worked with VDTs and those who did not. NIOSH scientists could not detect any extra risk of miscarriage for women working in front of VDTs during the first trimester of pregnancy.

For critics like Louis Slesin, editor of *VDT News*, that's not satisfactory. "We're terrified of the radiation issue," he says. Slesin points out there has never been a comprehensive study of VDT radiation in the United States. He adds that older VDTs are more likely to emit higher radiation levels than current models, a point underscored by the Finnish study.

"In the best of all worlds, no one would use VDTs more than four hours per day," states Slesin. After five hours at a terminal, Slesin believes people "hit a brick wall." One researcher is explor-

ing the idea of having the computer tell the worker to take a 30-second break every 15 minutes—and a three minute break every hour.

Concerns over radiation can be largely addressed by screening devices, manufacturers believe. Still, experts point out, screening devices can't block all extremely low frequency (ELF) radiation. In response to consumer demand, more manufacturers are offering low-radiation monitors at no additional cost. Some companies, like IBM, are now selling monitors that meet Sweden's tough MPR 2 standard. In the meantime, an absolutely safe level of ELF—or even whether ELF is hazardous—has not been determined.

No federal law regulates VDT use, although Greenberg reports that 20 states are considering proposals for VDT standards. It's been more than a year since a San Francisco ordinance to protect VDT workers was struck down. The judge ruled that the state of California, but not a city, could mandate such requirements. The ordinance would have forced businesses to provide terminals with

continued on page 38

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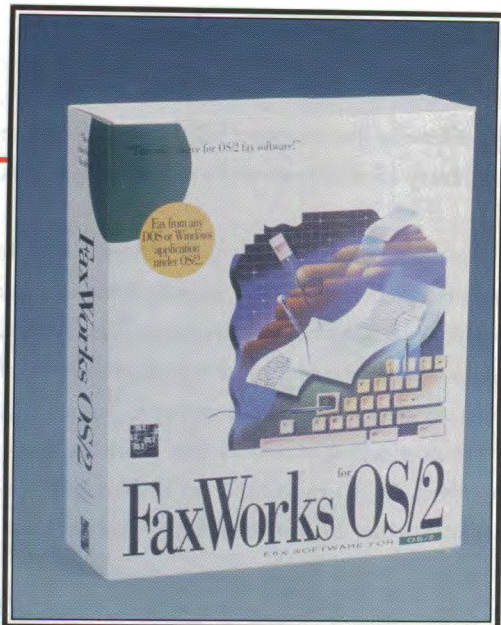
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VINTAGE CANNAVINO

An audacious risk taker, James Cannavino has risen from the bottom rungs of IBM in Chicago to senior vice president of Personal Systems—the division which includes Personal Software Products and OS/2. Known for a brash style developed on the streets of Chicago's west side, Cannavino likes to take "yes" for an answer. *OS/2 Professional* Editor Edwin Black scored an exclusive interview with Cannavino at the successful OS/2 Technical Interchange held in Phoenix on February 22. The interview was held just minutes after Cannavino made the case for OS/2 to a standing-room-only auditorium. An edited transcript of the interview follows.

Edwin Black: With the recent turmoil we have seen at IBM, some of which you alluded to in your remarks here at the Technical Interchange, can we expect the next CEO at IBM to maintain OS/2 as a priority?

James Cannavino: I think so. The initiatives we have taken are industry driven and technology driven. The personality running the company can mold our approach to it. But once you're in it, you're in it. So I expect to see the whole IBM company continue to rally behind OS/2.

OS/2 2.1 has slipped. It was expected in late March. What is the new release date you're carrying around in your back pocket?

The OS/2 team has a set of quality goals and qualification goals that they're not going to compromise. They decided they needed one more beta, and they're doing that beta on CD-ROM right now. I expect that cycle will take a couple of months.

The end of May, in time for Spring COMDEX?

I think so. They [Personal Software Products] are responsible for that and I think they will do that. But it's their product.

This delay, are we talking additional features not yet seen or just fixes?

Our primary goal is to make sure that our customers on 2.0, and the ones that are going to roll out on 2.1 in large volume, have a rock solid product to run their business on. Edwin, we're seeing people roll out OS/2 in the mission critical parts of their business faster than anyone expected. This is not experimentation anymore. People are running their business on OS/2. That's why we must be very careful to ensure high

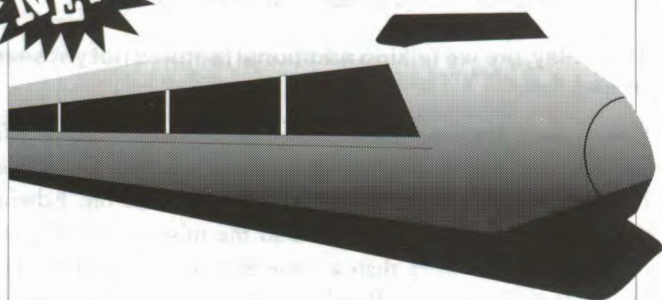


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A lot of OS/2 buyers are having a hard time finding compatible hardware. Is IBM going to increase its hardware certification program?

It's been increased. Remember, we started, for all intents and purposes, mid-year last year. We're looking at a program we're only three-quarters into. It's exploding. The hardware suppliers are more and more interested as there is more pull from customers on OS/2 applications. The hardware problem is then just what you would expect to see at the start of a big operating system. You grab the key applications, key hardware vendors, and then from there the rest get pulled into it. We only had a couple of OEMs when we started. Today we have over 80 OEMs. We're starting to track not just hardware vendors and their support packages but adapter cards. By the time 1993 ends, OS/2 will be a pretty pervasively supported product.

How has the delay of Windows NT affected the OS marketplace. Did Microsoft's delay give OS/2 a needed breather?

Think about it for a second. We launched OS/2 2.0 in the spring of last year. We learned an awful lot about our product as we put it into as many areas as we could possibly test. Despite the most extensive betas ever done in the software industry, we're still learning a lot. NT has that same process in front of it. This will be its first year of existence on the face of the Earth and everyone will be discovering what it's about. So while NT is a competitor for production-size systems, it's not a real competitor this year.

But NT's delay has indeed given a lot of breathing room to OS/2 in the market place.

It sure did.

And that means?

Look at this conference. It's sold out. We probably turned down as many people as we accepted. Because right now we have something real, something developers can work on. OS/2 is here today and ready to roll out. That's our powerful message. I would of course like to think that our successes are based on the strengths of OS/2, not the delays or challenges someone else is facing.

Indeed, but how are you going to go beyond mere words to satisfy major frustrated corporate OS/2 users such as the person from Mobil who publicly asked during your question-answer session why her company can't get prompt information or service on OS/2? Mobil is not alone. We've all heard of many others with similar com-

Q & A

plaints. You have encouraging words. But how does Mobil get a return call in under three hours?

Look, we're just going to do it. We're going to take the customers here as a model, discover their problems, and make sure we develop specific plans for each and every one. As we at IBM start to change, and they start to change, we both have something to learn. They don't do business the same way they used to or have the same support structure for their customers. Now we also have a new support structure set in place. We just need to make sure both sides are lashed up to each other. We do indeed have plenty of skill and capability to support our customers in a very timely way. We'll just get everybody in a room and solve the problem. That can happen very quickly.

As IBM is struggling to become more competitive, your product line now seems to be divided up into the PS/1, ValuePoint and the PS/2 lines. Is this a division along genuine personal business usage, or is there really more of an overlap?

No, we've been working very hard on market segmentation for a long time. When we started looking at our retail market, Edwin, we saw some retailers who are very important to us because they deliver a significant constituency in the marketplace. Forget the products *per se* for a second. Focus just on the channels.

We thought we could put a lot of consumer products through those channels. But we also find a lot of our dealers now also serve businesses. These dealers don't have hours in the evening, and they're not open on the weekend. Many don't even have storefronts. People who need our computers may have a hard time getting them through one of those folks. They don't buy enough to warrant an outbound sales call. By the same token, these customers surely don't have enough time to take a half day off from work to look for a computer. So we started to recognize that both channels and product were important. Our team is world class at that process now. That's why you're seeing us attack the market as we have been.

How does development time figure in?

As development times goes down, as we build a more common technology, the ability to build our product for the market is simply getting easier. That's why PS/1 is a launch into the retail market. Is this retail product going to have some of the same features as the ValuePoint or even a PS/2? Sure. But it's not about not having one of our better features. PS/1 is after selling personal computers to people who go into retail stores to buy personal computers. We want all of that market. We were not in that business segment just 18 months ago when I started it. Now look at the industry estimates. We had well over a 20 percent share of that United States retail market during last year's fourth quarter. That's 20 percent from a standing start just two years ago.

And ValuePoint?

We see two different distribution channels for ValuePoint. There

are a lot of folks who would just as soon pick up the phone to order a computer they already know a lot about. We're not going to tell the person who is comfortable ordering a computer in that way that he can't.

Who is that person?

Demographics? He tends to be reasonably knowledgeable, and tends to not need a lot of support structure. He knows more about the industry than the average person. He's an intense reader of the industry publications, for example. And his segment is growing. Dell markets to that segment pretty strongly. So does Gateway. We also have a group of customers who are under financial pressure. They are very price sensitive. It isn't that they wouldn't prefer to think about the longer term purchase, they just don't have that luxury. They're more concerned with how to make their business supportable this year. These two groups create a strong purchasing segment for ValuePoint.

How does PS/2 figure into the overall plan?

Our premium product, the PS/2, had a record year last year. And it's off to a very strong start this year. Add it all up, and we have teams of people who are focused on market opportunities. And those teams will build products customized to those opportunities. That's why from now on, Edwin, you'll see at IBM a set of brand marketing teams with some development teams hunched up right behind them. So don't look at us the way you did before. Because IBM is not that same company.

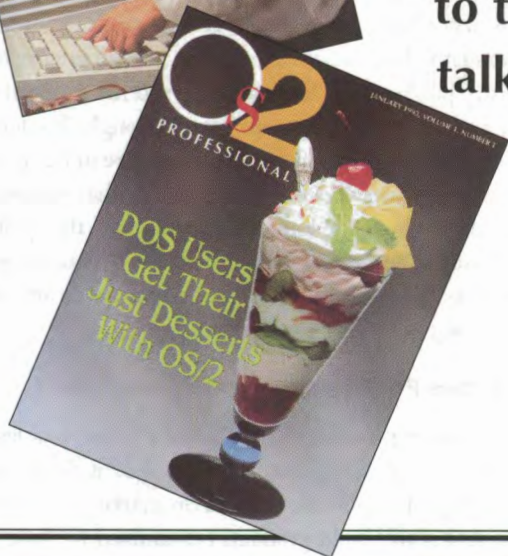
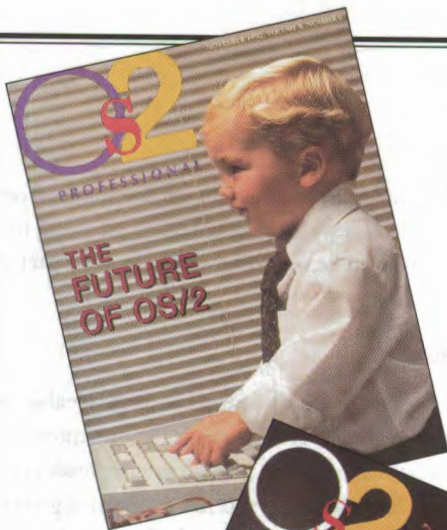
You're a dynamic kinda guy. Were you one of those contacted in the search for the new CEO of IBM? Now don't be modest. [At press time, IBM announced that Louis V. Gerstner, chairman of RJR-Nabisco, would become IBM's new CEO.]

First off—and I really believe in this—John Akers has been a great leader in this company. He has always set his own agenda, and I thought it took quite a guy to set the agenda saying, "It's time for change." Now the search committee has been headed up by (former Johnson and Johnson chairman) Jim Burke. You would expect him to talk to a lot of folks inside and outside of the IBM company.

Were you one of them?

Yes, I was one of them. Jim Burke is a very competent executive, and has an excellent team on the search committee. They are going to do a very good job. And they're thinking about what they need to do for the IBM company in terms of a senior executive. The most important thing is that they build a management team. This is a very large business. It's not that one person doesn't make a difference. It's just to run something this large, you need a whole team. And they will need to put a team together.

Thank you Mr. Cannavino. ♦



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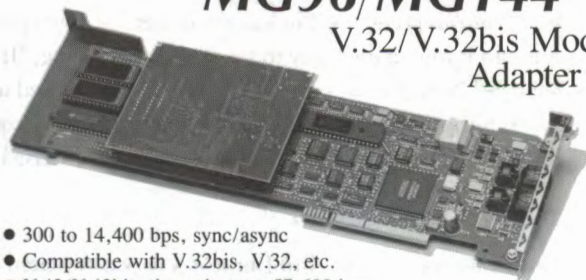
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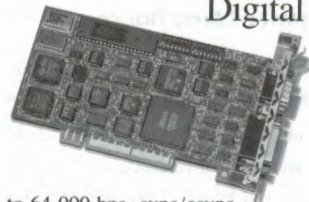


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BYTES AND PIECES

continued from page 13

is working on .DLLs which will enable previous versions of OS/2 to handle the new .INI format. There was no indication as to when the replacement .DLLs will be available.

At press time, users of the March 1993 beta also are reporting .INI corruption and other serious problems with the latest version of MMPM/2 (Multimedia for Presentation Manager). Users are advising testers to delay installing MMPM/2 until IBM issues a fix for this problem. If you absolutely must install MMPM/2, then back up OS2.INI and OS2SYS.INI before proceeding. On a positive note, users can now copy

OS2.INI and OS2SYS.INI using the COPY and XCOPY commands while OS/2 and the Workplace Shell are active.

Currently, two rounds of "fixes" are available for some problems users are experiencing. Users who plan to install the March 1993 beta should first obtain M21SHP.ZIP and 21REXX.ZIP from CompuServe (PSPBETA, Library 3) or from practically any OS/2 electronic bulletin board. The files contained in these .ZIP packets should be applied to the new beta immediately to avoid problems. IBM reportedly is readying other fixes and is deciding how best to distribute them. Stay tuned to the CompuServe PSPBETA forum

and other OS/2 on-line sources for the latest information.

Herb Tyson

IV League becomes a vendor

The OS/2 Independent Vendor League (IVL), a confederation of some 250 OS/2 vendors, has become a vendor itself. IVL has revamped its convention presence, converting its booth to an on-site sales medium for OS/2 books, magazines, newsletters, courseware and consulting services. IVL sources say they hope to fulfill any order within a day or two of purchase. That means that when a convention registrant returns home, the software or book will be waiting. The new

point-of-sales operation will premiere at Spring COMDEX.

Brad Klierwer

T-Shirts for professionals

The OS/2 Professional T-shirts have arrived in both adult X-L and large child sizes. The thick fabric 50-50 Hanes heavy-weight cotton and polyester shirts display the distinctive OS/2 Professional color logo and are guaranteed to declare your operating system as soon as you enter a room. Shirts are available through Disc-O-Tech Marketing for \$15 each. An order blank can be found on page 63.

Eli Allen

Do these quotes sound familiar?

"It doesn't crash in the debugger!"

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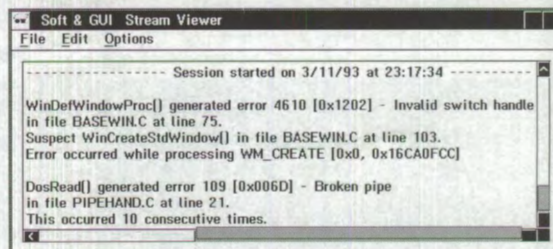
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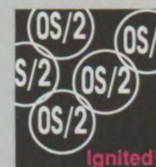
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BILL FRYMIRE: "BEST OF SHOW" WINNER, 1992 CORELDRAW WORLD DESIGN CONTEST
Bill Frymire is the Creative Director of Showmakers Productions, a Vancouver-based graphic design firm. His entry, "REX," is a portrait of his pet iguana. Bill spent more than 150 hours on his computer creating the image. The resulting art is so complex with so many elements, layers and colors, there is no printer in existence that can print the image directly from a computer.

VENDOR PROFILE

No Walls, No Borders FOR COREL

No secretaries. No frills. No walls. Corel says they have never adhered to the kind of corporate structure other companies have built.

BY JANET ENDRIJONAS AND EDWIN BLACK

They don't like walls at Corel Corporation. And no one at the company expresses the feeling better than director of operations Kerry Williams. "We'd rather yell at each other over the walls than knock on the door," says Williams. Walls seem to symbolize unnecessary obstructions at Canada's famous graphics software giant. Indeed, anything that's unnecessary has no place at Corel, where the Spartan approach permeates every endeavor.

With an installed base of more than half a million CorelDRAW users globally, ten percent of which is already OS/2, you'd think the company could relax.

Not at Corel, a firm of only 270 employees, which last year let staff go in the midst of economic boom just to make sure they were staying as lean and mean as possible.

Williams, for example, manages all manufacturing, advertising and export with a core operational unit of only six, including himself. No secretaries. No frills.

"We have never adhered to the kind of corporate structure other people have made," says Williams. "We carve our own path. And we must be able to change on a dime. There are changes every day.

Those who prosper are those who can react and adapt—quickly."

The founder and president Michael Cowpland, more than exemplifies the Corel mindset. His relatively small office—

12x12—does have walls for privacy when confidential phone conversations are under way—but those walls are made of glass. A door is a necessary evil. He doesn't have a secretary either. In fact, the cramped glass box is little more than a 486 workstation running both Windows and OS/2, four chairs and a small round table, a bookshelf and one helluva cluttered desk.

"The glass walls were done with an eye toward communicating with as many as possible," says Cowpland. It's more than just communication. Corel staffers say that Cowpland is intrinsically involved in every detail of company operations. Being able to see and be seen has allowed Cowpland to handcraft Corel into a global force for graphics software. Indeed, anyone who has ever contemplated using a high-performance



Corel founder and president, Michael Cowpland.

graphics program has heard of CorelDRAW.

Cowpland founded Corel Corporation in Ottawa, Ontario, Canada, in 1985 as a desktop publishing systems integrator for the

VENDOR PROFILE

Canadian government and for local corporations. After initial forays into the device driver and utilities market (and a font program with a terrible user interface that the company would just as soon forget), Corel launched its flagship product: CorelDRAW.

The program is available on OS/2, as well as Windows, Macintosh and UNIX. (When it comes to handling large graphics files DOS is too limited to be a viable platform for this product.) Ironically, the magic of CorelDRAW is a true marriage of art and science. Back in 1987, the original team was a combine of mathematical wizards with a graphics mindset. "It's a schizophrenic development team," states director of software, Susan Wimmer. North Carolina born Wimmer adds, "There's no use having math strengths without insight into the graphics community."

Indeed the original team leader, no longer with Corel, was known for his cartooning. To determine the demands of professional designers, the team interviewed six graphic artists in the Ottawa area. Mathematician Pat Beirne recalls, "I spent one day talking to one, and a half day talking to another, and we eventually learned what graphics people and draftsmen expected."

A lot of graphics using a little memory was the challenge. "This was originally designed to work with Windows back in 1987 when memory was expensive," remembers Beirne. "We knew artists would be tight on memory but would work fast. And they wanted to use lots of curves."

That required new mathematical solutions hammered out by Beirne. "From the beginning we decided CorelDRAW should be based on Bezier curves," he says. "I found very little in the literature so I had to do all the original calculations. The Bezier curve allows you to use very little memory to provide very natural curves. Using the Bezier form, any simple S-shaped curve can be represented with only eight numbers.

"The program is chock full of invisible mathematics," he continues. "Behind those pretty curves and colors, there are hundreds of thousands of calculations going on per minute. Because of that, if I'm trying to get a CorelDRAW image from inside the computer to the screen, I can do that quickly, since it is represented internally as Bezier curves."

Beirne's math was a formula for success. Today, Corel has a network of more than 80 distributors in 40 countries. Customs and traffic guru Cindy Clysdale has become Corel's in-house expert on moving the product into every country Corel trades with. And the marketing team helps stay abreast of the local mindset. For example, says Williams, "In Australia and New Zealand, they don't use

the term 'upgrade.' They say 'crossgrade.'" Speaking the local lingo is vital since OS/2 versions of CorelDRAW will soon be available in 21 languages, including Kanji. Half the company's business comes from outside North America, although the United States remains Corel's number one market.

To further enhance its world-wide recognition, Corel sponsors the CorelDRAW World Design Contest, which attracts graphic design and art work from registered users around the globe. The 1991/92 competition had some 3,371 entries and thus has become the largest computer design contest in the world.

Corel made its original commitment to the OS/2 platform with its 16-bit version of CorelDRAW in the fall of 1990 and never wavered in its support. When 32-bit power became a reality in OS/2 version 2.0, Corel reaffirmed its commitment with CorelDRAW 2.5.

Sales of the native Presentation Manager version of CorelDRAW 2.5 are doing well. Cowpland notes that customers really love having features such as printer spooling and multithreading that were not available in the 16-bit version in an environment that can better handle the often immense size of graphics files. Razmik Adamian, Corel's OS/2 engineering product manager, adds that under OS/2 2.0, where there is real threading available, this multitasking does not slow system operation.

Corel was right in on the ground floor in developing the 32-bit application. "Our group had the OS/2 2.0 Alpha version from the very beginning in the fall of 1991 and we have been working with IBM Toronto and IBM Boca Raton ever since," says Adamian. "When they were getting ready to demonstrate OS/2 2.0 at COMDEX Fall '92, we were getting weekly updates from IBM and giving them weekly updates as well, as we all tried to ferret out the bugs. Changes were still being made right up to the last minute before the show and somehow, as if by magic, it all came together in time."

"We've been really encouraged by the increase in CorelDRAW sales with the release of 32-bit applications," says Fiona Rochester, media relations manager at Corel. "Before the 32-bit version, sales of CorelDRAW for OS/2 were quite limited. Most of the copies sold were for demonstrations, company evaluations and use by IBM OS/2 salesmen. But we hung in there. We had developed a native Presentation Manager application from day one and we were committed to the OS/2 market.

"We continued our development of CorelDRAW for OS/2 despite the slow growth of the operating system," adds Rochester.

VENDOR PROFILE

"We were able to do this because, unlike other companies that invested big dollars in research and development as well as promotion for their OS/2 products, we were able to keep our investment low. CorelDRAW for OS/2 was completed by a team consisting of two engineers (with a third engineer joining near the end of the project). At the same time, we have enjoyed a cooperative, mutually beneficial two-way relationship with IBM. IBM has used our product as an integral part of its demonstrations to boost OS/2 sales and this has exposed our product to many potential IBM OS/2 customers, even its largest major accounts. This has saved us countless dollars in promotion, while generating tremendous visibility and a great deal of interest in CorelDRAW for OS/2."

CorelDRAW 2.5's success is understandable. While there has been no third-party benchmark confirmation of its figures, engineers at Corel insist the 32-bit version of CorelDRAW provides a 25 percent increase in performance. The installed OS/2 base continues to climb. "Our customers are installing OS/2," says Rochester, "because they can't wait for Microsoft's

Windows NT to be released and to stabilize."

Adamian adds that OS/2 2.1 has been tested by the engineers at Corel who have thrown every possible obstacle and problem in its way. And it has proved extremely stable. OS/2 2.1 will offer graphics support optimization and support Windows 3.1. Indeed, according to Adamian, Corel's engineers ran tests of Windows applications and found many of them ran faster under OS/2 than Windows itself, a fact that encourages Corel to believe that OS/2 is an operating system that will grow.

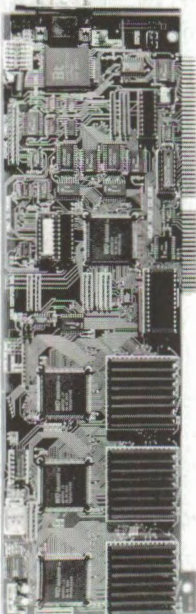
Rochester points out that in an "open systems" environment there really shouldn't be a "dominant operating system." Applications should work cross-platform. But the computer industry is "attuned to thinking in terms of market dominance," she adds, "and, at the moment, that is working in OS/2's favor."

Perhaps the OS/2-CorelDRAW combination in action can be seen best at New York's regional Bell operating company, NYNEX. NYNEX uses CorelDRAW in its training center, where they import photos and drawings from just about everywhere for use in preparing training brochures for the company's own inter-

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nal customers as well as outside telephone-end users. "We tried Windows and crashed a number of systems," says NYNEX manager Ken Jenkins. "But we use the combination of OS/2 and CorelDRAW for development for applications to run on many different platforms."

This is not a small OS/2-CorelDRAW installation of which Jenkins speaks. He is talking about 5,000 end users and 600 developers.

So where does Corel go from here? Wimmer assures, "I have three or four more versions before I run out of ideas." Cowpland adds the company is looking forward to another 60-70 percent global growth in 1993. A Windows NT version will be released, but there will be limitations because NT lacks support for certain functions. "Corel is adopting a wait-and-see attitude," he says. "We expect OS/2 to grow and with it CorelDRAW for OS/2. At the same time, Windows NT could come on strong and cut into that growth somewhat."

"On the other hand," Cowpland continues, "Windows NT may not come on that strong and that will give OS/2 a window of opportunity on which to capitalize and we'll be right there with CorelDRAW 2.5. Currently the sales momentum for OS/2, and hence our 32-bit application sales momentum, is strong. We will be doing our part of the promotion to keep the momentum going. Corel will remain committed to providing the product for the OS/2 platform."

That kind of positive attitude is indicative of Cowpland and the Corel team. Indeed, asked where he thought the company could improve, Cowpland paused and answered, "I don't know. If we could have done it, we would have." ♦

Janet Endrijonas is a regular columnist for Computer Currents and Computer Monthly; Software Editor for Managing Automation; and the author of "RXPC the Anti-Virus Handbook."

SPECIAL REPORT

continued from page 27

more ergonomic work positions. In addition, the ordinance required regular breaks.

IBM was among the companies providing financial support for the suit that led to the law's demise. Opponents of such laws are concerned they'll drive up the cost of hardware and make it tough for businesses using computers to comply.

Local laws regulating VDTs elsewhere appear headed for the legal junk yard. An appeal of a Suffolk County, New York, measure that would have required eye examinations and rest breaks for computer workers upheld an earlier decision which voided the rule. Both the San Francisco and the Suffolk County ordinances are entangled in further appeals.

And what of the federal government? "After many delays," notes *VDT News*, "OSHA has formally announced that it is considering the development of a national ergonomic standard." That was last fall. OSHA's ergonomics section chief says such a standard would "at the very least" take three years to develop. Three years might be considered fast by Washington regulatory observers. And prospects for new federal computer standards may be further enhanced by the Clinton Administration. When he was in the Senate, Al Gore was one of the few congressmen to demonstrate an interest in computer health issues.

But all the prospects for change are nonetheless too slow for those worried about VDT radiation. "I'm frankly dismayed by government and industry's inability to confront the problem [computer safety] directly," says Slesin.

The Carpal Tunnel and Lumbar Strains

The symbolic carpal tunnel can take a special toll on the back. Nearly everyone hunches over his terminal no matter how hard he tries to assume the correct posture. The lumbar damage can be more than simple aches, pains and complaints about "my achin' back."

Hank Kliewer, a longtime IBMer and now this magazine's multimedia columnist, recalls the six months he was out of the office when he developed severe lumbar problems. Doctors demanded he stay flat on his back for months. To keep up with work, Kliewer ultimately rigged a monitor to the wall near the ceiling. With a keyboard fastened to a panel above his chest, he was able to continue using his computer. Kliewer's problems are extreme, but not all that unusual.

OS/2 planners are very aware of the posture problems inherent in traditional workstations. As such, a radical new workstation

continued on page 54

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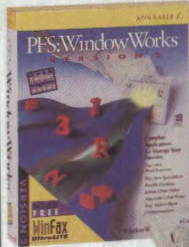
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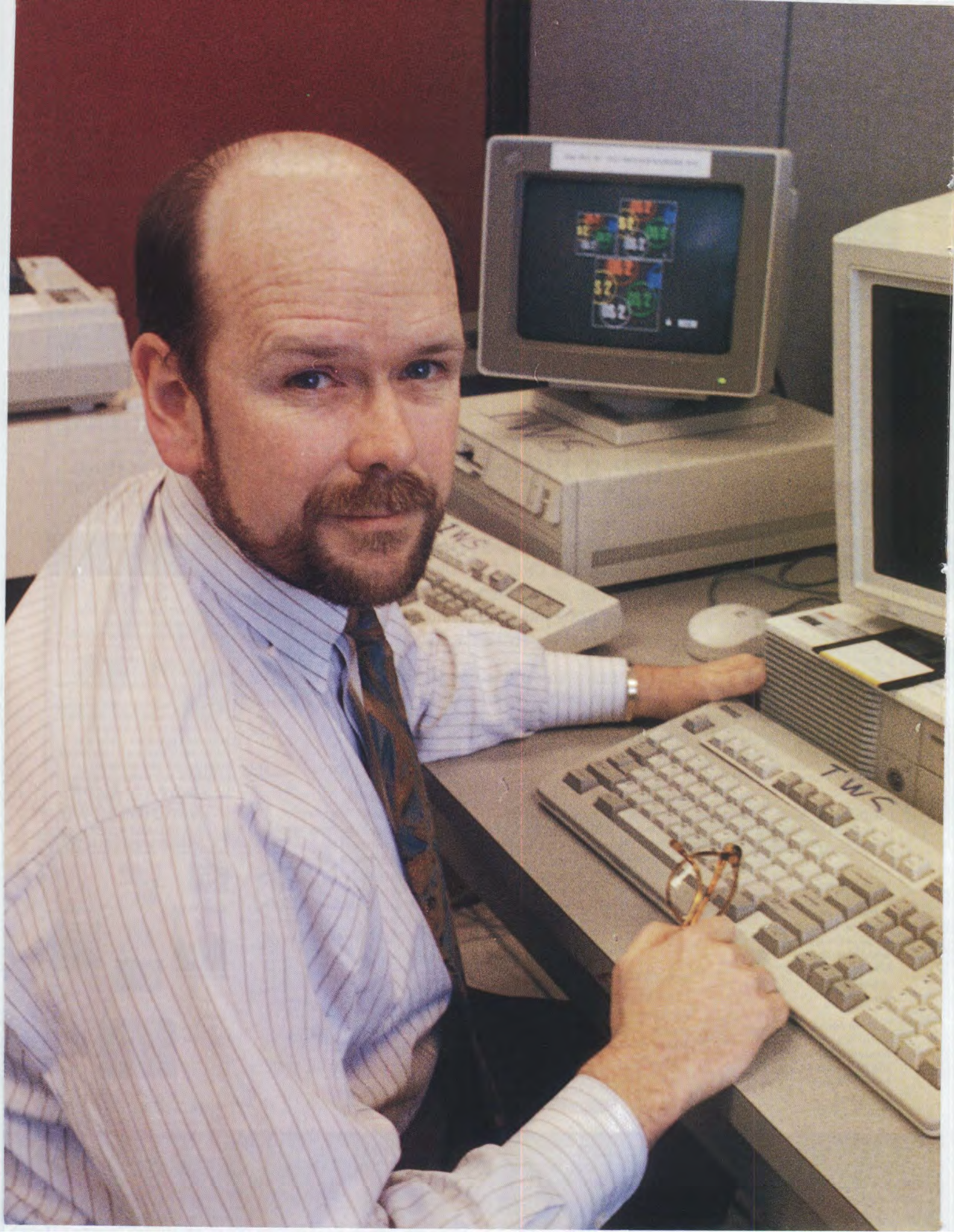
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ROYAL BANK BANKS ON OS/2



OS/2 is a linchpin of the Royal Bank's migration from mainframe to PCs. And that makes George Oliver the perfect OS/2 aficionado to lead the way.

BY WAYNE RASH JR.

The first thing George Oliver does in the morning is turn on his IBM Thinkpad computer and check his electronic mail. He scans through several commercial services and dials up his IBM desktop computer at the office where PC Anywhere lets him check local e-mail as well. Only when he's satisfied that he's handled any emergencies that might have happened overnight does he leave home in the center of Toronto and head for his office at the Royal Bank, overlooking the Skydome. Managing the technology that delivers up-to-the-second facts to over 50,000 Royal Bank workers is a full-time job and then some. Oliver needs to get an early start.

George Oliver is the manager of Information Delivery Technology for the Royal Bank of Canada, the largest financial institution in that country. He is responsible for overseeing the selection and support of the technologies that Royal Bank will use in its forthcoming conversion from a mainframe-based operation to a PC network-based banking system. Oliver is part of Royal Bank's Technology Group, which is spearheading this massive change in direction in the traditionally conservative banking industry.

In reality, Oliver is actually executing what many IS managers only dream about, but what few are allowed

to do. He's remaking a major corporation's entire computer infrastructure.

When the transplanted Scot first joined Royal Bank in 1979, he joined the bank's rising interest away from proprietary mainframe technology and toward personal computing. In the late '80s, Royal Bank began an ambitious program of buying thousands of PCs each year. Oliver moved into his present job in 1987. Two years later, the first local area networks were being deployed, and he was in on the ground floor.

That year, 1989, also marked the beginning of the movement toward OS/2-based servers for Royal Bank. "We'll be pretty much finished with that by the end of this year," Oliver notes. This has required a withering pace to outfit each of Royal Bank's 1,600 branches with OS/2-based networks and equip them with software and communications hardware to tie the entire system together. To support this evolving system, Oliver's teams are using IBM Model 90/95 systems and some NCR 80486 file servers supporting IBM's LAN Server, plus a locally-developed remote network management package. "All of this is spread across six time zones," says Oliver, which explains why he's such a busy man.

From the time he arrives at work, George Oliver is

USER PROFILE



busy indeed. He checks his e-mail again when he gets to the office. This time he also checks his mainframe-based appointment calendar to see just what's in store for him each day. Oliver says that Royal Bank is working with an outside vendor to create an OS/2-based appointment calendar that will meet all of the bank's needs.

Only after he's made his way past the electronic mail and the appointment calendar, does Oliver's day start in earnest. He deals with the daily crises and multiple meetings that any executive contends with, and works with everything from budgets to reports. Oliver says he has done most of his writing with WordPerfect, although that has changed, at least for now, "I'm trying out DeScribe," he notes. He also works with Lotus Notes for its messaging capabilities and Lotus 1-2-3 for financial planning.

Most of his work, though, involves the Bank's new information systems. Part of the challenge is the difficulty of deploying programs in an organization as large as Royal Bank. "Anything we do that's a network-wide deployment can take at least three years," Oliver says. "We were installing local area networks at the rate of 10 each week, and it took us three years to do our network." Of course, Royal Bank's network includes more than just LANs. There is also SNA software the bank imports from Barcelona and control software that comes from Texas.

Adding to Oliver's challenges is the requirement for the bank

itself to produce part of the software that ties the banking network together. "We had to build processes that allow us to measure response time at the transaction level to make sure tellers are still servicing transactions in under three seconds," Oliver explains, "so the big system's management requirement in our network is part of what we're doing." Building management software of this level is integral to Oliver's project group. "We much prefer to buy rather than to build, obviously, but if there's a piece of business function or systems level function which is not there and no one's building it—we're quite capable of building it ourselves." Indeed, there are more than 200 people in the technology group, and more than 1,200 systems developers working for the bank.

For example, Oliver predicts that the bank may well develop its own upgrades of workstations when individual DOS workstations need to move to OS/2.

Already hundreds of bank users are moving to OS/2 for their desktop workstations. "Predominantly we're still DOS," Oliver explains, and adds, "but we are intent on migrating to OS/2 2.0 on the desktop. And that is really driven by the business unit seeing a benefit." Oliver adds that 2.0 has to show a business benefit to the users themselves for the migration to occur.

"All the banking applications we wrote for DOS run as a single double-click on an icon under OS/2. All that complex network-

USER PROFILE

ing is done by us." By developing applications around operating system independent APIs, Oliver and his staff are designing applications that allow seamless migration through three generations of technology, he claims.

He also notes that because of the size of the Royal Bank network, performing updates by hand clearly wouldn't work. As a result, his teams have worked to distribute OS/2 on servers that in turn do the updates across their networks. "We're busy putting the infrastructure in place so that the business units, when they decide to upgrade, can do so in an orderly fashion."

Oliver is proud that his teams have already updated 380 PCs in Toronto to OS/2. "We've just started this migration," Oliver says. The initial move to OS/2 includes users who are the account managers who work with the private banking customers. These managers have an OS/2 desktop created by Oliver's teams that allows them to manage the bank's relationship with these customers better. Other users include corporate account managers who must manage complex relationships between multinationals or corporate entities, plus head-office knowledge workers. There's also a teller application being deployed as an OS/2 desktop. "This will give tellers information at their fingertips," Oliver chuckles, as he borrows a phrase.

"We need proof that the business benefits of deploying this desktop stand up to some fairly hard analysis by bankers," he emphasizes. "You can imagine what it's like trying to sell a banker on the return on investment by technology. You'd better have your figures right."

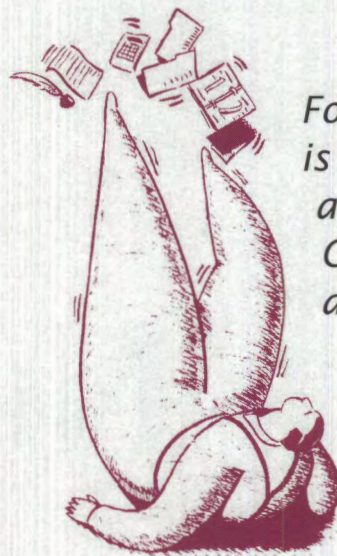
George Oliver first learned to get his figures right at the University of Manchester where he graduated with honors in computer science. Now that he's in Canada, Oliver keeps busy with more than just work. He's an avid squash player, and lately has begun running seriously. "I was watching my weight steadily gain. I decided that rather than be champion blimp boy of 1993 I'd better start doing a little more exercise." To make sure he has a goal, the 43-year-old Oliver has signed up for his first 10 kilometer run in May. Currently, Oliver puts in a 5K run every other day to stay in shape.

More than just a runner, Oliver is a serious watcher, or more precisely a film buff. Each summer, he takes off the week of the Toronto Film Festival. He says he'll watch, "any dreck you can put in front of me." Of course, he prefers excellent films, but explains that in order to appreciate the good, you must first see the absolute worst. Ironically, he adds, "It's kind of how you look at technology, I suppose."

That in mind, Oliver will watch some three to four films daily






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The Networking

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Certainly OS/2 version 1.x has experienced its share of difficulty in the marketplace. There were many reasons for its relatively small market penetration, but perhaps foremost was the fact that there was a limited selection of native OS/2 applications available and that OS/2 version 1.x did a fairly poor job of running DOS applications.

Still, even version 1.x of OS/2 had much to recommend it. Its High Performance File System (HPFS) achieved exceptional disk performance from ordinary drives, its ability to take advantage of large amounts of memory allowed it to provide excellent performance even in a heavily loaded system, and its multithreaded pro-

tected-mode environment provided a secure and reliable platform for applications.

While these features were not compelling enough to persuade the industry to give up its dependence on DOS applications, they did allow OS/2 to achieve considerable success as a LAN server platform. OS/2 did well in this area principally because its advantages (performance and reliability) were particularly important in a server environment, and because its major drawback (application availability) was largely irrelevant to the LAN server. As a result, a great many LANs were built using OS/2-based servers supporting DOS-based requesters.



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When it comes to networking with OS/2, you may have more options than you think. Here's a panoramic view of the OS/2 LANscape.

BY JIM GILLILAND

Of course, with OS/2 version 2.0, this situation has changed. We finally have a version of OS/2 that fully supports the wide range of DOS and Windows software on the market, and an ever-increasing number of high-quality native OS/2 applications are arriving as well.

As a result, many corporate users are reexamining OS/2 as an end-user platform. In particular, corporate users are looking for ways to best utilize OS/2's advantages on both server and requester ends of their local area networks. As you will see, OS/2 networking opportunities and options abound on both new and existing networks.

The Workplace Shell Is Network Aware

First of all, OS/2 2.0's Workplace Shell (WPS) includes a feature designed specifically for use with local area networks. An OS/2 machine that is attached to a LAN automatically includes a network folder icon on the OS/2 desktop. If you click on the network icon, you are presented with a folder containing an icon for each available server. Click on one of the servers and it will open into a folder showing each available resource on that server. The object menu for each of these icons will allow you to attach to the respective resource, and ask you to log in if necessary.

Using this feature, a LAN user sees the same view of the net-

CONNECTIVITY

work regardless of network type (IBM, Novell, Banyan). In fact, if multiple requesters are installed, the network folder will reflect each of their respective networks. Accessing network resources is consistent with all other aspects of the WPS. The user can create a shadow of a network server or printer on the OS/2 desktop, just as with any other WPS icon. This makes it very easy for the user to work with network resources since they can be handled in exactly the same manner as local resources.

OS/2 multitasking capabilities provide one important network feature that is often overlooked—the ability to support multiple concurrent network requesters. Using OS/2 2.0, it is quite possible to run the IBM, Novell and Banyan requesters concurrently, allowing a user to log in to multiple networks simultaneously. In most cases, the requesters can share the same network hardware and portions of their protocol stacks. In particular, IBM's new Network Transport Services/2 (NTS/2) makes it easy to run multiple requesters using a single set of drivers.

Novell Netware

Most LANs in operation today use Novell Netware as the Network Operating System (NOS). Novell was an early supporter of OS/2, and continues to support OS/2 with a powerful requester for OS/2 2.x. Netware servers are basically OS independent, so adding OS/2 workstations to an existing Netware network is simply a matter of acquiring and installing the new requester software.

While the Netware Server does not require any changes to support OS/2 requesters, you should consider adding Novell's Name Space support to your server. The Netware Name Space Network Loadable Module (NLM) was originally developed to support long Macintosh filenames, but it has been enhanced to support long filenames and extended attributes as used by OS/2 applications. Without this feature, your OS/2 machines will not be able to use long filenames on Netware servers.

In addition, Novell supplies OS/2 versions of its Netware utilities along with the requester. While the requester does not require these server utilities, you will probably want to install them. These utilities are the OS/2 counterparts of Netware commands commonly used to administer DOS-based Novell systems: Login, PConsole, SList, Map, NDir and so forth.

The Netware Requester for OS/2 is licensed by Novell for a flat fee of \$30 per site. Obviously, this is basically just a handling charge. The package contains the requester itself, a selection of drivers for network adapters from Novell, 3Com, Western Digi-

tal, IBM and several others, and the set of Netware utilities mentioned above.

Installation of the OS/2 requester is easy. The install program guides the user through choosing the network adapter, selecting which services are to be used (SPX, IPX, named pipes and so on) and setting up any necessary defaults (preferred server, for example). All of the necessary drivers are installed in CONFIG.SYS. Unlike a DOS system, there is no need to add anything to your AUTOEXEC.BAT (with one exception which will be explained below). The installation program will add a Netware Services folder to the OS/2 desktop, and this folder will contain the main Netware Tools program.

There are two basic ways to attach to a Netware Server from an OS/2 system. The first is a system-wide attachment which allows access to network resources from any application on the machine, whether it's a DOS, Windows or native OS/2 application. This type of attachment may be performed from the Netware Tools program, which is a full WPS application. Its menus offer a collection of panels for viewing and using various Netware resources, including servers, disks and printers. It is also possible to perform this same type of attach via the standard OS/2 Network icon described above, or by invoking the login utility from a command prompt. Note, however, that only the command prompt login utility actually runs the user login script to initiate the resource mappings. The other methods merely attach to a server, leaving resource mappings to be established as a separate step.

The other method is more like logging in from a DOS requester. Under normal circumstances, if you attach to a Netware resource from an OS/2 machine, that resource will be available to all OS/2 sessions, including DOS sessions. However, if you install the Novell NETX program in an OS/2 DOS session, that will preempt the "global" OS/2 login, and allow you to initiate a separate Netware login from that individual DOS session. If you add the NETX program to your OS/2 AUTOEXEC.BAT file, then your DOS sessions will all require separate logins.

In this manner you can actually have several logins active at once on a single OS/2 requester. One login can be global in nature, affecting the entire OS/2 system, while one or more DOS sessions can have separate logins active. Note, however, that any resources which have been attached globally are invisible to those DOS sessions. Each of the DOS logins is completely independent, allowing the use of multiple Netware accounts in the various DOS sessions. Of course, this multiple login capability is only available to

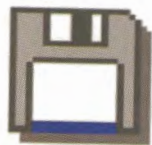
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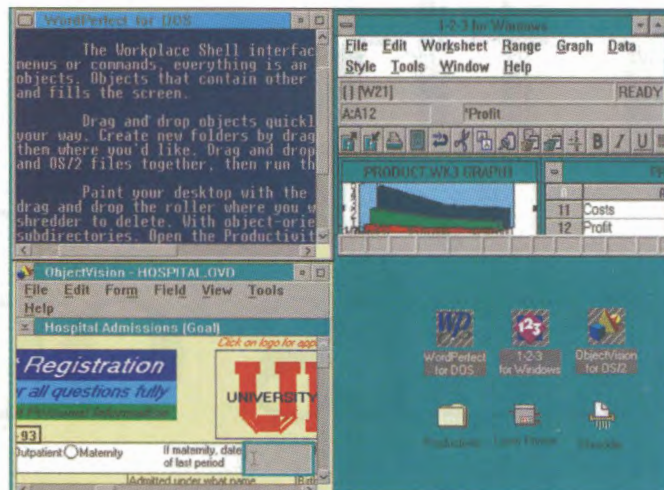
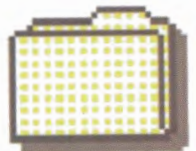


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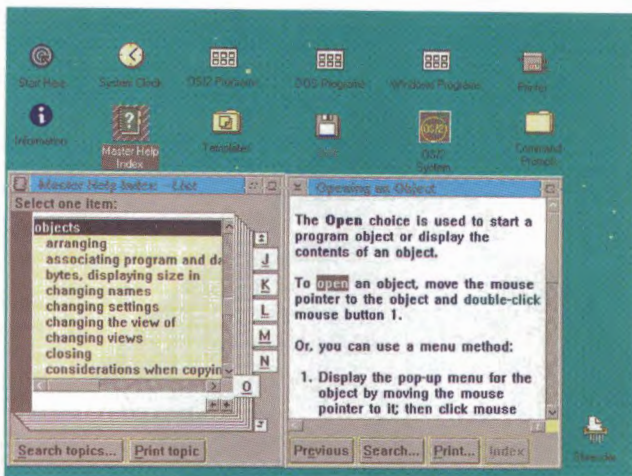
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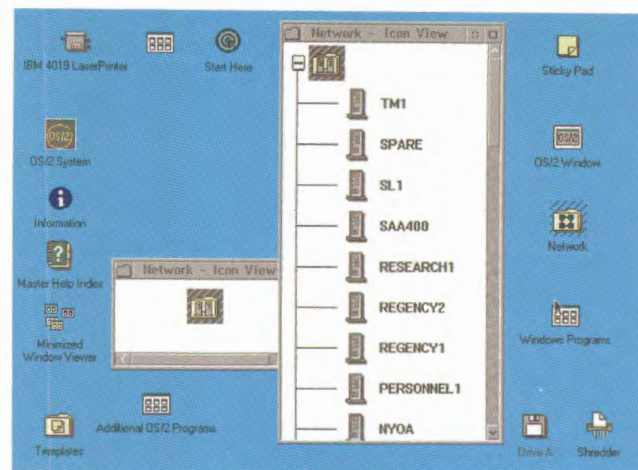
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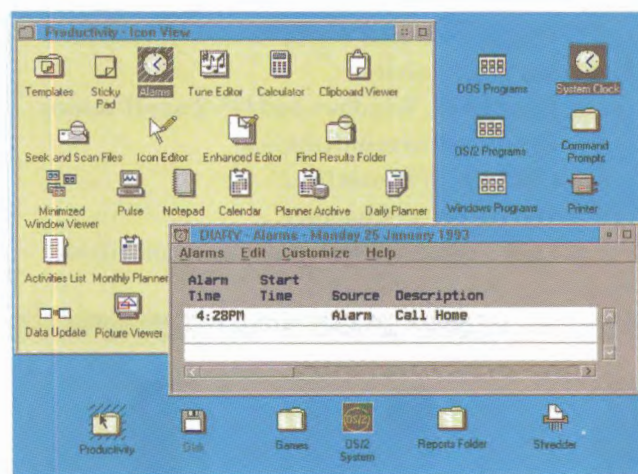
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OS/2 DOS sessions—native OS/2 sessions can only see the resources attached through the global login.

When using DOS sessions in this manner, OS/2's memory utilization provides some real benefits. By loading the NETX program high, and placing all of the network drivers outside of the DOS session's memory space, a typical OS/2 DOS session will provide much more available main memory than a "real DOS" machine would. With NETX active and full mouse support, a DOS session can still have more than 637KB of main memory available for application programs. And since OS/2 provides EMS, XMS and DPML, a program written to take advantage of those facilities can have up to 512MB of memory at its disposal.

Banyan

Though it has not promoted it widely, Banyan has been providing a limited availability requester for OS/2 2.0 clients since last spring, shortly after OS/2 2.0 itself shipped. During 1992, Banyan added a number of features to its OS/2 requester, and late last year it made it available to its customers as a formal product. However, the Banyan OS/2 Requester is not included in the standard Vines package. It must be purchased separately.

The current version supports Vines 4.115 and Vines 5.0. It supports any NDIS compliant network hardware, and provides all of the features of Banyan's DOS client, including standard login and logout, full Z-Drive support, PC-Print (allowing client machines to share local printers with the network) and messaging (supported via a PM program). The release version has been enhanced significantly over the limited availability version, with improvements in performance, setup and configuration, documentation and coexistence with other network requesters.

Peer Networks

None of the leading peer-to-peer network systems has announced formal OS/2 support. Artisoft is currently investigating the development of an OS/2 version of its Lantastic software, while Novell has not announced any such intentions for its Netware Lite product.

However, Lantastic users need not despair—Artisoft's current DOS-based software works quite well under OS/2 when run in one of its virtual DOS machines. This requires the user to run an actual copy of DOS in an OS/2 session (OS/2's built-in DOS support won't work with Lantastic), but the system does work correctly in this environment. As a result, Lantastic users can access their networks from OS/2, but only from a DOS session.

Note, however, that the current version of Lantastic has a sig-

nificant restriction. Under OS/2 it can only be used as a requester, not as a server. Artisoft is preparing a new version that eliminates this restriction. The next release of Lantastic will remain DOS based, but will provide both requester and server functions under an OS/2 DOS box, thus allowing an OS/2 machine to share its resources (including print queues and HPFS drives) over a Lantastic network. This new release is expected during the first half of 1993.

Unfortunately, the DOS-based Netware Lite product does not fare as well under OS/2 as Lantastic does—it will not function in an OS/2 DOS session.

LAN Server and LAN Manager

IBM's LAN Server and Microsoft's LAN Manager have a common heritage. Both products are based on Microsoft's original LAN code, but the products are significantly different. They do share a common core of features, however, and each product has been enhanced in ways that have influenced the other.

Both products are traditional server-based networking systems, with all network services based at the server. The server component of both packages is designed specifically for use on an OS/2 system. Both products offer sophisticated fault-tolerance features, like support for Uninterruptable Power Supplies and Disk Mirroring and/or Duplexing.

Both products offer a special version of OS/2's HPFS, designed specifically for use on a server. While early versions of LAN Manager and LAN Server could not match Novell Netware's excellent server performance, the new file system (called HPFS386) brings them right up to Novell's performance level. (Two recent independent tests conducted by LANQuest Labs and the National Software Testing Laboratories have confirmed that IBM's LAN Server [version 3.0 Advanced] is the fastest of the three leading network operating systems, beating both Netware and LAN Manager.)

HPFS386 accomplishes its excellent performance by working directly alongside the OS/2 kernel at the CPU's most trusted protection level. Because it runs in this trusted mode and has direct access to the network device drivers, it can respond to network requests without the overhead that would normally be associated with changing CPU protection levels.

Both products are supplied with a set of Network Device Interface Standard (NDIS) drivers for a variety of network cards. NDIS was developed by 3-Com and has been taken over by Microsoft.

Domains and Aliases

When IBM first introduced its LAN Server product, it had been

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enhanced considerably over the Microsoft original. Two of the enhancements that had been added are among LAN Server's most important features: **domains** and **aliases**.

A domain is simply a group of servers that are managed as a single system. This simple concept has powerful implications for any network administrator who must manage a network that is physically interconnected with other networks, a situation that is very common in most larger businesses. In many campuses or buildings, a single LAN (called a backbone) is used to interconnect departmental LANs throughout an organization. By organizing the resources belonging to a single department into a domain, those resources can be managed without interference to or from other domains which are physically on the same network. Although they share the same wire(s), each logical network (domain) is invisible to the others.

The domain is not in any way tied to the physical makeup of the LAN. If a department is distributed over several different floors of a building or areas of a campus, the domain can encompass all of them. Thus, the only tie between the logical network (the domain) and the physical is that all resources in the domain must be accessible through the physical network. In fact, if the physical network includes wide-area connections, a single domain could span multiple cities.

Of course, there are instances where a requester in one domain may wish to connect to a resource in another domain. These are called external resources, and they can be accommodated easily.

The alias is another simple concept with powerful implications for both network users and administrators. Aliases are network-wide names for individual network resources. Each device (directory, print queue or communications port) is assigned an alias when it is shared by the server. The user then uses this alias as the network name when establishing a connection to that resource. Since the resource can be accessed by its alias, users need not know the names of the various servers that make up the domain. Carefully chosen aliases can make networks much easier for users to navigate.

The alias concept proves just as useful for the network administrator. Since the users know only alias names and not server names, a resource can be moved easily from one server to another without significant impact on its users. For example, if the server that contains your e-mail directory is getting too full, the administrator can move it to another server and redefine the alias to access that new server. The users will access the same alias as before, but will now be connected to the new server. Resources can be

moved from server to server without the users even being aware of the change.

With version 2.0, Microsoft added the domain concept to its LAN Manager product, so the two products have more in common today than they did originally. The alias concept, however, is still unique to LAN Server. LAN Manager clients must still access network resources by specifying the name of the individual server.

Peer Services, Macintosh Support and TCP/IP

Until recently, Microsoft's LAN Manager provided features needed by some users that were not available in the IBM LAN Server environment: Peer Services, support for the Apple Macintosh and a TCP/IP transport layer. However, with LAN Server 3.0, IBM has added Peer Services to its product, and the new IBM LAN Server for Macintosh adds Macintosh requester support to the LAN Server base. Also, the LAN Server 3.0 product has been enhanced to support IBM's existing TCP/IP transport and NetBIOS for TCP/IP, so LAN Server and LAN Manager are now evenly matched in these areas.

Peer Services is a feature that allows a network requester to act as a limited server, without requiring the full server code to be installed (or, more importantly, licensed). This can be beneficial in a couple of ways. First of all, it allows user machines to share resources on the network, which can be very useful when one user has a printer that other users would like to access occasionally. More significantly, though, Peer Services allows a user workstation to make its local hard disk available to the network on a temporary basis. This crucial facility makes it possible to use a central tape backup system to back up user data on local drives throughout the network. Without Peer Services, centralized backup of local disks is not possible.

TCP/IP is an industry standard networking protocol used in local and wide area networks (LANs and WANs) to facilitate communications among heterogeneous, multivendor system environments. LAN Server and LAN Manager implement NetBIOS over TCP/IP via a technique called "encapsulation," where data formatted for NetBIOS is "wrapped" with the necessary IP packet format, sent across the network using the IP protocol and then "unwrapped" when it reaches its destination.

Both LAN Manager and LAN Server are able to support plain DOS requesters, Windows requesters and OS/2 requesters. Each now supports Macintosh requesters via an add-on product. IBM's offering is called "LAN Server for Macintosh"; Microsoft's is called "LAN Manager Services for Macintosh."

LAN Server Entry vs. LAN Server Advanced

IBM's LAN Server is actually sold in two separate versions, LAN Server Entry version and LAN Server Advanced version. The Advanced version contains only a few features that are not in the Entry version, but they are very important features for performance and reliability: HPFS386 file system (described above), fault tolerance features (such as support for disk mirroring and disk duplexing) and support for multiprocessing servers, such as the PS/2 Server 295. Also, the Advanced version of LAN Server uses a powerful enhancement to NetBIOS called "Sideband," which dramatically improves performance over the Entry version.

Both versions of LAN Server provide file and print services and other basic LAN functions, plus support for Uninterruptable Power Supplies (UPS), Peer Services (described above), RIPL (which allows LAN-attached workstations to boot from a copy of DOS or OS/2 that resides on the server) and CID (which allows LAN-attached workstations to install OS/2 or other software from a copy that resides on the server).

Network Management Using OS/2

Though it is largely beyond the scope of this article, it should be noted that there are numerous network management products available for the OS/2 platform. Particularly noteworthy in this area are IBM's LAN NetView products and Novell's Network Management System (NMS). LAN NetView is a part of IBM's Distributed Systems Management family of products, and incorporates a comprehensive toolset for managing virtually every aspect of a LAN, including the end-user applications that run on it. Novell's NMS is a tool for centralized management of an IPX-based network, including facilities for looking at performance and configurations of both servers and user workstations.

Another important tool is IBM's System Performance Monitor/2 (SPM/2), which can be used to monitor the performance characteristics of one or more OS/2 machines from a remote location. This can be a very useful tool for keeping track of server performance and utilization in a multiserver environment—especially if the servers are spread over a wide geographic area.

The Future—Novell's OS/2 Server

Novell and IBM announced a very interesting agreement during 1991. While the most visible part of this agreement allowed IBM to make Netware available to its customers in an IBM package and with standard IBM support, it also included a statement from Novell indicating that it intended to build a version of its Netware Server that uses OS/2 as its base. At last year's Spring COMDEX,

IBM's Lee Reiswig demonstrated a preliminary version of this code as part of his OS/2 showcase, so we can anticipate its arrival as a product in the relatively near future.

Most Netware implementations for other platforms (Unix, Vax and so forth) have been based on a set of codes that Novell calls "Portable Netware." However, Netware for OS/2 will not use this code. Instead, it will be based on Novell's new Netware 4.0 code, which is expected to be delivered as this issue goes to press.

Since Netware for OS/2 will carry the overhead of the full OS/2 system, it is likely that native Netware 4.0 will outperform it somewhat. So performance will probably not be a good reason to choose Netware for OS/2 over a native Netware implementation. However, an OS/2 implementation of Netware will allow a wide range of OS/2-based client/server applications to be concurrently run on the same server hardware. This ability will provide significant cost savings in instances where a separate server would otherwise be required.

Another potential benefit of Netware for OS/2 would be the capability to use a single server to provide a set of network resources to both Netware and LAN Server requesters. However, this would require Netware for OS/2 to access the HPFS file system, and it is not clear that Novell intends to implement such a feature. If Novell chooses to support only its own proprietary file system, then this mode of operation will not be possible.

The Future—LAN Server and LAN Manager

One of the biggest original criticisms of Microsoft's LAN Manager and IBM's LAN Server was their lack of interoperability. The two products were developed from the same base, yet it was not possible to run them as a single system except at the most basic levels. In addition, the APIs for the products were different, so an application developer had to write a specific version for each NOS. Responding to this criticism, Microsoft and IBM agreed to converge the two products to a much greater level of interoperability. LAN Manager 2.0 and LAN Server 2.0 were the result of this convergence, and they were much closer to each other than their earlier versions (their APIs agreed, for instance). However, the diverging paths that IBM and Microsoft have chosen in their OS strategies have made it clear that their NOSes must also diverge.

In fact, LAN Manager 2.1 has already begun that divergence, adding Microsoft's own protocol stacks, new security features and Layered Application Device Driver (LADDR) technology. Similarly, LAN Server 3.0 has added exclusive features such as the CID (installing OS/2 and related products over the LAN), a domain

management API and IBM's own protocol stacks (NTS/2).

Microsoft has stated that, while it will continue to support OS/2 as a platform for LAN Manager, its new Windows NT system will become the base for LAN Manager code when it is released later this year. In the future, new versions of LAN Manager will appear on NT first, with support for OS/2, Unix and other systems to follow.

IBM, on the other hand, is quite thoroughly committed to LAN Server and OS/2. Since IBM will no longer have access to new OS/2 versions of LAN Manager, it must develop future versions on its own. Gearing up for this task, IBM has transferred much of the prior responsibility of its Austin Programming Center to other locations, freeing up staff at the Austin development facility to work specifically on new versions of LAN Server. LAN Server 3.0 is the first version to result from this new independent effort.

Farther in the future, IBM has indicated its intentions to migrate LAN Server into an NOS that follows the OSF DCE standards. Since Microsoft has announced similar intentions, the IBM and Microsoft products may retain some degree of interoperability despite the fact that their respective developers are no longer working cooperatively.

Conclusion

OS/2 provides an exceptionally robust and powerful environment for both network servers and network end users. Novell, Banyan and Microsoft are currently supporting OS/2 2.0 as network clients, while IBM is supporting it as both server and client, and Novell intends to add OS/2 server support soon. Users who are installing new networks would do well to examine closely all three NOSes. Meanwhile, those with existing networks are likely to find that their current NOS vendor is already supporting OS/2 clients.

At this writing, IBM has shipped more than two million copies of OS/2 2.0 in just nine months, and is just a short time away from shipping an even more powerful version of OS/2, namely 2.1. Clearly, OS/2 is finally becoming an important end-user environment, and fortunately we have a wealth of choices for tying it into our local area networks. ♦

Jim Gilliland is a LAN and Desktop Systems Consultant at IBM's Network Consulting Practice in Cleveland, Ohio. He is also the moderator of the international Fidonet OS/2 conference. He can be reached at Fidonet 1:157/200.34, or via Internet as jimg@vnet.ibm.com.

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design produced by Forminco has been adopted by IBM as its showcase for OS/2 demonstrations and test drive centers. Forminco's workstations are ultra-utilitarian contraptions in which you envelop yourself. Pods, slanted surfaces, cable spoolers and phone mounts are fitted to the user's height and reach requirements. Everything is exactly where you would put it if you could invent this contraption yourself. The CPU, printer, keyboard and monitor can be slotted into special mounts and shelves. The ergonomic stations are finished with scratch-resistant black epoxy and customized to the individual. Foot massagers and an extraordinary chair with lumbar support round out the ensemble.

The deluxe wrap-around version, called the Corner Unit, provides a central computer workstation, plus two desk-like wings on either side equipped with rail-mounted phones, lamps, fax machines, in-boxes and calculators, as well as matching file drawers. These bizarre and futuresque workstations look like something beamed down from the ops center on Deep Space Nine. Actually, they don't come that far, just from Canada.

Health Computing

Our entrance into the "carpal tunnel" has only covered a fragment of the healthy computing picture. Eye fatigue, pregnancy issues, circulatory problems, litigation and regulation and indeed more on carpal tunnel and lumbar problems will all be the focus of a new monthly column, "Healthy Computing." As terminal illnesses proliferate, "Healthy Computing" will talk to both the user concerned over his personal status and the OS/2 professional, who must develop a corporate strategy to address both productivity and disability. ♦

Jeff Levine is a CNN medical correspondent whose reports can be seen regularly on CNN. Edwin Black is editor and publisher of OS/2 Professional and has covered health policy extensively.

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at the festival and "come out of it square-eyed. It's something I feel I have to do just to catch up with my culture," he explains. While Oliver's favorite movie is "The Crying Game," he didn't see the Academy Awards ceremony in which it received three surprise nominations. Oliver actually avoids the Academy Awards, referring to them as "hype."

Part of the reason George Oliver loves living in Toronto, where he shares a home with a wife and a cat, is for its broad selection of films and other cultural activities. "Peter Ustinov called Toronto 'New York designed by the Swiss,'" recalls Oliver.

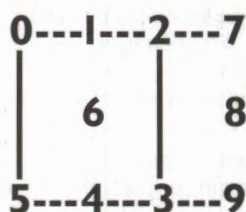
Eventually his work will take him elsewhere within Royal Bank's realm. That's something the Toronto lover knows. But he'd like to take some of the knowledge he's gained "to stimulate some of the more adventuresome business units to work with some of the newer levels of technology." Oliver predicts that the "DOS monolith" will crack, and will open the PC platform to new choices.

In the future, he predicts, choices will depend on what makes sense for the business. The next five years, he says, will see "a lot of deployment of the stuff we have put together now because it suits

our business and gives us leverage on the investments we've made in PCs and LANs."

Despite the bank's investment in OS/2, Oliver is always looking at new opportunities including Microsoft Windows NT. He concedes that deploying new technology isn't easy or cheap. "If you choose to deploy a technology, there has to be a business reason to deploy it, and there must be a business problem that you're solving." The future will have the same requirement. "I think we're very good at understanding that there's a cost to deploying technology, and if you remain focused as an enterprise on what technologies make sense to your bottom line, then you can win. But if you let that vision of a cohesive enterprise slip, then you can easily devolve into a strategy *du jour* in which people just choose whatever happens to be in the Sunday newspapers." ♦

Contributing writer Wayne Rash Jr. is editor of the Washington Post computer Showcase; contributing editor for Corporate Computing Magazine; columnist and contributing editor for Communications Week and consulting editor and Washington correspondent for BYTE Magazine.



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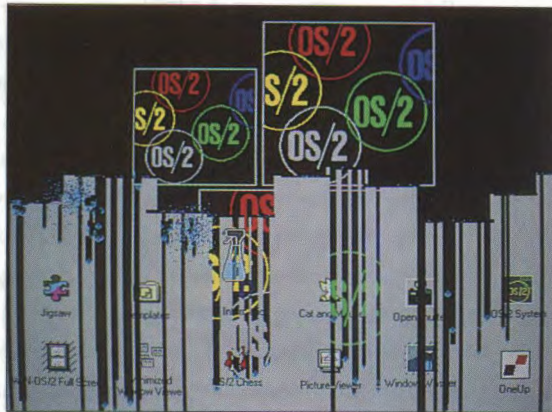
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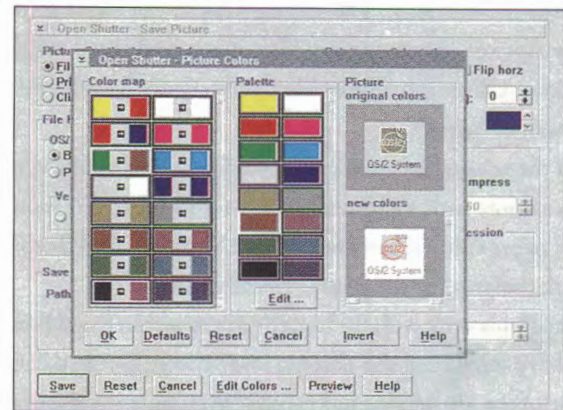
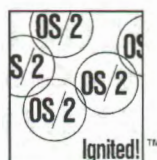
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SYSTEM REQUIREMENTS

Any OS/2 2.0 supported Personal Computer. A 3.5" high capacity diskette drive (1.44MB). No memory is required above that needed for OS/2 2.0.



TIPS AND TECHNIQUES

BY GORDON SCOTT

An OS/2 user walks down the street and meets a DOS user at an intersection. They exchange greetings and begin discussing their favorite topic—operating systems. At one point the OS/2 user says to the DOS user, “How do you do file management?”

The DOS user replies, “I use Panes’ File Manager, what do you use?”

“OS/2’s Drives folders,” says the OS/2 user.

“Oh yeah?” asks the DOS user, “what’s the difference?”

The OS/2 user is thoughtful for a moment and asks, “Where are you going right now?”

The DOS user answers, “I’m finishing a late lunch and rushing back to the office. Where are you going?”

In the distance a church bell chimes four times as the OS/2 user replies with a smile: “Home.”

DOS file management and OS/2 file management are not so different in execution—after all, everything you do in DOS can still be done in OS/2. But because file management is integrated as part of the Workplace Shell, you can perform most file management tasks as a simple matter of course. Even better, sticky file management tasks, such as backing up directories and restoring them, don’t make you wait. OS/2’s preemptive multitasking design keeps such tasks from holding your computer hostage. In this column you’ll find some tips and techniques that can free you from the difficulties of DOS file management.

Get a graphic view of all files on your hard drive.

How to do it:

- Open the drives folder (Located in the OS/2 system folder).

- Double click on the **C drive** icon.

What this buys you: An easy-to-use file organizer.

In the drives folder, you will see icons for all of your available drives represented. These are specialized folders designed to give you a tree-structured view of the drive you select. In this folder you can expand or contract the view of the directories and their subdirectories by clicking on the + or -

The icons in the drives folders are defined by your system. If you have a large hard drive divided into two or more partitions, you will see a separate drive icon for each partition. When you connect to a local area network, the network drives that you can access will appear in the drives folder also. When you disconnect from the network, those network drives will no longer appear in your drives folder.

Set your drives folder to remain in alphabetical order.

How to do it:

- Open the **Settings** to the drives folder.
- Select the **Sort** tab on the settings notebook.
- Select **Type** in the drop-down box labeled **Default sort attribute**.
- Select the checkbox labeled **Always maintain sort order**.

What this buys you: Alphabetical arrangement of your drive icons, under any circumstances.

For almost any other kind of folder, sorting the icons by name will provide the desired result. But the drives folder is more particular. The surest way to keep the drive icons in alphabetical order is to sort them by type. If you connect to a LAN, then the icons for the LAN drives will appear and will stay in alphabetical order, so that you can quickly locate the one you want.

Filter large directories by file type.

How to do it:

- Open the **Settings** of a directory.
- Select the **Include** tab on the settings notebook.
- Enter an asterisk, a period and any three characters for a file extension. Example: *.exe

What this buys you: time.

Using the drives folders to view the files of any given directory has one shortcoming: if there are a large number of files in a directory, the method becomes slow and unwieldy. This can easily be the case in a LAN environment. But suppose you want to see all spreadsheet files contained in a directory. Suppose you know that there are perhaps a 100 files in that directory and only a few of them are spreadsheet data files. You can save yourself a bit of trouble by setting the include filter to something like *.WKS. This would show you only the files in that folder with the extension WKS after the filename. You save time since OS/2 doesn’t have to draw an icon for every file in that directory.

NOTE: This drawback is a result of the 16-bit graphics engine currently being used by OS/2 2.0. Subsequent versions of OS/2 have substituted a 32-bit graphics engine which eliminates many of these performance problems.

Move, delete or copy multiple files using the drives folder.

How to do it:

- Open the folder of a directory you want to move files from.
- Hold down the Ctrl key.
- Click on each file you want to move.

TIPS AND TECHNIQUES

- Release the Ctrl key.
- Select any icon with mouse button two to display a pop-up menu.
- Select **Move** on the pop-up menu.
- A notebook appears allowing you to specify where you would like to move the files to, when you have specified where, select the **Move** pushbutton.

NOTE: These steps also apply to the **Delete** and **Copy** commands on that same pop-up menu.

What this buys you: efficiency.

You can use a single move, copy or delete command on any number of files, all of which have different file types. No DOS command can manage that.

Remove excess confirmation messages.

How to do it:

- Open the **System settings** icon to display the Confirmations page of the settings notebook.
(You can find it in the System Setup folder, inside the OS/2 System folder.)
- Deselect the confirmation messages you consider unnecessary.

What this buys you: time.

When you delete, copy or move files and folders, OS/2 will display a message that asks you to confirm the task you have initiated. As if to ask, "are you sure about this?" The system gives you the opportunity to cancel your request to copy, move or delete. For many users, this causes more inconvenience than it saves. The confirmation messages become painfully annoying when you have to confirm the deletion of 20 files individually.

I prefer to leave only one of these boxes still selected, and that's the checkbox labeled, **Confirm on folder delete**. To delete a file you have to be specific about it. Accidentally deleting a file from the drives folder's view is possible, but unlikely. However, if you try to remove an entire folder, all of the files within that folder will be deleted. By setting the system for **Confirm on folder delete** you will have one last chance to turn back before you delete an entire directory full of files.

Associate programs with the types of files they create.

How to do it:

- Open the **Settings** for the Icon Editor (located in the Productivity folder).

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TIPS AND TECHNIQUES

- Select the **Association** tab of the settings notebook.
- Click once in the field labeled **New name:**
- Type *.ICO (to specify all files with .ICO as the file extension).
- Click on the **Add** pushbutton.

This specifies that all files that have .ICO as the last three letters after the file name will—by default—start up the Icon Editor when you click on the icons that represent them. To see how this works:

- Open the drives folder, and double click on **C drive**.
- Open the folder for the \OS2\MDOS\WINOS2.
- Find the file called WINOS2.ICO and click once with mouse button two on its icon.
- Click on the right-pointing arrow next to **Open** on the pop-up menu.

You will notice that there is a menu option called "Icon Editor."

- Select **Icon Editor** on this pop-up menu, and WINOS2.ICO will be loaded into the Icon Editor when it starts.

NOTE: This is an example for associating the Icon Editor with all .ICO files; however, this example could work for almost any program.

What this buys you: a simple method for starting programs.

Associating programs with files can come in handy on a LAN or when you have a lot of files. If you use the drives folder to view your directories, then association makes executing a program simple. You don't have to think about what program to use or where it is kept. Just double click on the icon of a file, and the associated program will start.

Even stand-alone systems can use this technique in a beneficial way. Especially if you use OS/2's special Work Areas.

Create Work Areas for related project files.

How to do it:

- Create a new folder by selecting the pop-up menu of any existing folder.
 - On the pop-up menu, select the right-pointing arrow next to the menu item labeled **Create another**.
 - Select the **Folder** item on the sub-menu.
 - When a notebook appears, select the **Create** pushbutton.
- Open the **Settings** of the new folder on the desktop. (It will be named **Folder**.)
- Select the **File** tab on the settings notebook.
- Select the **Work Area** checkbox.

What this buys you: a powerful task-related environment.

Work Areas are specialized folders. They have two unique attributes that other folders do not have. First, when you close a Work Area, it will close down all of the applications and files that were opened from inside that Work Area. Second, when you open a Work Area, it opens all the programs and files you had open just before you closed that Work Area most recently.

NOTE: Work areas are very powerful components when used skillfully. Subsequent TNT columns will address this issue. Watch this space for some unique ideas on how to use Work Areas.

Customize pop-up menus by adding menu items.

How to do it:

- Open the **Settings** of any data file or folder.

- Select the **Menu** tab of the settings notebook.
- Under the heading, **Actions on menu: Primary pop-up menu**, select the **Create another** pushbutton.
- Enter the word you would like to add to the pop-up menu in the field labeled, **Menu item name**.
- In the box labeled **Program**, enter the name of the program you would like to run whenever you select this new menu item.

What this buys you: a quick way to run batch files or other useful programs.

This tip works especially well with a Work Area. If you create a Work Area, you might want to start a program related to the task you created the Work Area for. You could simply make that program a menu item on the folder's pop-up menu.

NOTE: One drawback of this function is that you can't specify command line parameters or a path for the program you want to run. If the program you want to run requires such things, you need to write a batch file to specify them. Then you can have the menu item simply start the batch file. ♦

Don't forget, send your tips, techniques and questions to Gordon Scott. He can be reached through the Internet as "GSCOTT@STLVM22.VNET.IBM.COM". You can also speak to Gordon during normal business hours by phoning (408) 463-4483.



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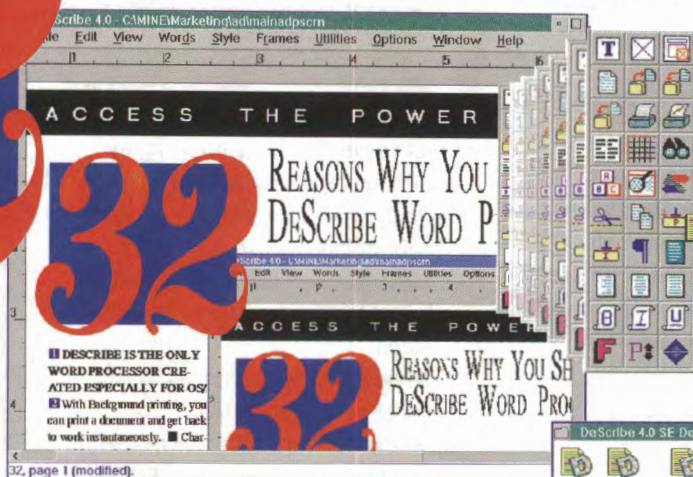


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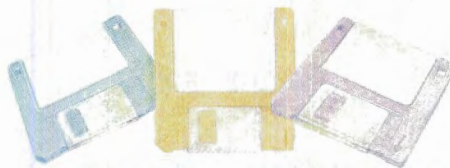
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DOT EXE

Software for OS/2

Sytos Plus

REVIEWED BY BRADLEY KLIEWER

You know you should be backing up your system on a regular basis, but do you? By virtue of its single process nature, DOS made backup inconvenient and time-consuming. Hence, only the most disciplined users took the time and effort to set and maintain a workable backup strategy. Nevertheless, years of market dominance have produced a plethora of backup and scheduling software for the DOS user. While many of these software packages will run in a DOS Window, they can't handle some OS/2-specific features such as long filenames on HPFS-formatted drives.

Sytron's Sytos Plus was the first backup software available for OS/2 2.0—and the signs of its adolescence are still showing. For example, Sytos Plus takes advantage of OS/2's multithreading capabilities both internally (for such processes as data compression) and externally (so that you may continue to work with other OS/2 programs while the backup proceeds in the background). However, there are times when Sytos processes the message queue too slowly, resulting in fairly long delays when switching to another window. These delays were particularly noticeable at program startup.

Features

Sytos Plus uses a PM interface for backup and recovery operations. In the extreme case (complete hard disk failure or erasure), you must first install OS/2 before proceeding with a file restore. Of course, you are far more likely to rely on the tape backup for accidentally erased files than a hard disk crash or reformat. Nevertheless, full system restore from tape would be a desirable option.

Sytos is also limited in its network backup capabilities. Unlike some network backup systems, Sytos cannot access drives on workstations—only a shared drive can be backed up. For full network

backup, you must install peer services or a backup device on each workstation. Sytos successfully accessed an OS/2 LAN Server from a workstation, but note that a full restore would be very awkward in such a configuration. In addition to OS/2 itself, the server software would require reinstallation and reconfiguration before the files could be restored.

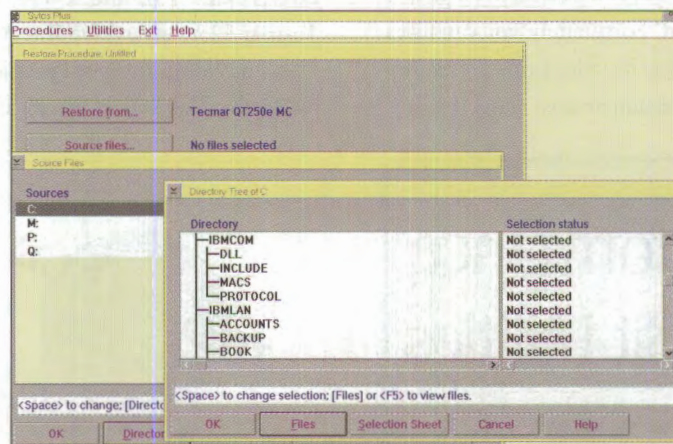
Although it uses a PM interface, Sytos "feels" as if it were designed more for programmers than the typical user. Every back-

up and restore option is designed as a procedure that defines the options, drives and directories that a given action should use. Thus, you can select options such as file compression, tape formatting and erasure and full vs. incremental backup. Sytos automatically configures several procedures upon installation. These include: full backup, full restore, incremental backup create and incremental backup

append (to save several incremental backups on a single tape). This is a great time saver when creating a backup since you can simply load a procedure and run it (or double click its icon in the Sytos program group).

You will find an abundance of options controlling everything from the type of backup to run to the tape's format. The formatting options include Error Correction Code (ECC), Quick File Access (QFA) and data compression. Sytos takes advantage of OS/2's multithreading for data compression; a sufficiently fast system can backup faster with compression if the data retrieval and compression threads outpace the data transfer to tape. This potential performance improvement comes at a price, however.

Data compression and QFA are mutually incompatible. Upon file restore, Sytos can locate and restore a file from a QFA-formatted tape much more efficiently than from a non-QFA tape.



Selecting directories for file restoration.

For example, on a compressed tape Sytos must start searching for a file at the beginning of the tape and read sequentially until the file is located. In one case, I waited 40 minutes for a file located near the end of a tape. With QFA, on the other hand, Sytos might locate and restore the file within 5-10 minutes.

Even without QFA, Sytos includes time-saving features. Sytos puts a volume name and timestamp on every backup tape. Sytos then stores file information for each volume on the local hard disk. If you need to restore a file you can search the volume information rather than read the tape directly. As a result, you don't even need to place the tape in the tape drive until you run a restore.

Although locating the files for restoration is rather straightforward, the procedural basis makes the restoration process itself somewhat awkward. Designing a procedure for a full system restore is sensible. However, most of your restore operations will probably be limited to a few files or directories that were accidentally erased. Even for this simple process, you must write a procedure to restore the files and then run it. Fortunately, you can use a simple point-and-click method to select the files from a directory tree and file list, so the method does retain at least some interac-

tive feel. But the initial definition steps and prompts to save the resulting procedure are unnecessary and annoying. A simple interactive restore selection would be a useful addition to the Sytos menu.

Sytos includes a scheduler which not only runs Sytos backup procedures, but any OS/2 command. For example, I programmed a schedule that transferred data from the local AS/400 to the LAN Server at 6:15 PM and ran incremental backups of the Server and workstation at 6:30 PM. In addition to daily events, you can schedule one-time, weekly, monthly and special events (the latter defined in terms of hours and minutes between backups).

Reliability and Performance

Unfortunately, I encountered a number of reliability problems when running Sytos. I tested the software on three different systems: a PS/2 Model 80 with a Tecmar QT-250e tape drive and proprietary host adapter; a Northgate 486/33 MHz with Colorado Jumbo 250 tape drive (see the separate review in Hard Drive, page 93); and a 486/33 MHz no-name clone with a Tecmar 525es tape drive and Adaptec 1540 SCSI adapter.

A number of different problems occurred between the various platforms. The Model 80, which runs LAN Requester and Com-

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munications Manager, tends to run low on RAM and disk swap space. When resources were running low, Sytos would sometimes corrupt the tape (making further incremental backups to the tape fail) or simply terminate without warning. The former case was not always noticeable unless the log file contents were examined (e.g., the log description would indicate the backup ran, but the log contents revealed that no files were written to tape). In the latter case, the scheduler would stop running—a critical problem since there was no warning that daily backups were no longer occurring. By setting Sytos to **Minimize window to desktop**, you can at least get a visual confirmation that the scheduler is still running.

One of the problems that occurred on the Northgate/Colorado system was more disturbing. The log indicated that all files had been properly backed up. But when it came time to restore the files, Sytos reported that the backup tape used an unreadable format. And this was on a new tape that had just been freshly formatted before running the backup. According to Sytron, there are several conditions that may cause this problem, including defective tapes or hardware problems. Sytron recommends running a compare immediately after a backup (this is an item that can be checked in the backup options for automatic operation). Additionally, I would

recommend that all backup logs be sent to both disk and printer—and the printed copy checked for problems.

An immediate compare after backup more than doubles backup time. But between OS/2's multitasking and the Sytos Plus scheduler, the consequences of a slower backup cycle are minimal. You can simply set the scheduler to run the backup an hour or so after the end of your usual work period. If you happen to be working unusually late, you can continue to run other applications while Sytos runs the backup in the background.

Throughput on the PS/2 and Northgate systems typically varied between 4-6 MB/min when no background processes were running. But even when Sytos was running in the background, other processes continued to run smoothly during backup operations. The throughput to tape dropped significantly and foreground tasks would occasionally experience brief pauses, but both systems remained stable and reliable.

The 486 clone with the Tecmar 525es, however, was unusable during backup procedures. Throughput to the SCSI-based Tecmar 525es ran as low as 0.5 to 1 MB/min while in the foreground. Indeed, the system as a whole was brought to a crawl. Other tasks would run so slowly that it sometimes appeared as if the entire sys-

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tem had stopped. Several attempts at reconfiguration and tuning failed to achieve any significant performance improvements. A technical support representative at Sytron suggested that the OS/2 2.0 Service Pak (which had not been installed on the machine) might improve performance.

Summary

Despite the problems, Sytos actually ran very well most of the time. The Model 80/Tecmar configuration has had no problems since I

Sytos Plus for OS/2

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began monitoring free swap space more closely. But a few problems in backup software can become critical if they occur at the wrong time. Hopefully, maturity in both the OS/2 market and Sytos Plus for OS/2 will give us a new, more robust version of Sytos Plus in the near future. Sytos Plus could use much better error handling and management routines. In the

meantime, should you need a backup device, make sure your dealer will give you a grace period for a full refund. Depending on your hardware configuration and needs you may find that Sytos Plus works reasonably well on your machine, or that it runs slowly and unreliably. ♦

Bradley Kliewer is the Editor of OS/2 Professional.

Zortech C++ Version 3.1

REVIEWED BY TODD B. CROWE

Zortech C++ 3.1 by Symantec is the first commercially available C++ compiler for OS/2 2.0. Fortunately, it will not be the last. While Zortech C++ offers a set of features not yet available in any other OS/2 2.0 compiler, the large set of features it does not include make it a questionable value.

Zortech C++ offers full support for ANSI C and C++ languages. It can generate code for OS/2 2.0, OS/2 1.x and DOS applications. It includes a complete ANSI standard library, C++ Tools and has advanced numeric and full multithread and double byte character set support. It integrates with IBM WorkFrame/2 and works with the IBM C Set/2 debugger. Zortech C++ does not include its own integrated development environment (IDE) or debugger.



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Levine Computer Consulting	65	69
Lexmark	92	18
Mark Minasi & Company	58	21
Microgate	32	72
Micrografx	2	20
Mirrors	97	32
Mitnor Software	17	53
MSR Development	87	33
Oberon Software	65	34
One Up	56	67
Oracle	98	57
Orange Hill Software	17	59
Podium/University of Delaware	73	61
Proportional Software	12	22
Red Shark	72	48
SAS	16	46
Sofnet	28	23
Soft & GUI	33	35
Softbridge	79	36
SourceLine	78	56
STAC	14	54
Tritus	81	65
Wave Technologies	86	50
WordPerfect	0/1	55

DOT EXE

It is also missing many of the tools necessary for creating OS/2 2.0 Presentation Manager and WorkPlace Shell applications.

Zortech C++ Compiler

Viewed strictly from the standpoint of its compiler, Zortech C++ for IBM OS/2 2.0 compares favorably to other products available now. It provides a rich set of features not available in any other compiler for OS/2 2.0. Those features include C++ support, multiplatform support, advanced numerics support and fast, mature code generation.

Zortech C++ was the first C++ compiler available for the PC platform. With its release in December 1992, it is also the first commercial C++ compiler available for OS/2 2.0. Zortech C++ offers ANSI C and C++ language support. A variety of compiler options make it easy to port software from other C compilers and from pre-ANSI C to ANSI C to C++. And it conforms to the AT&T CFRONT version 3.0 standards, including precompiled headers, templates and nested classes.

The compiler can generate code for the entire Intel 80x86 line as well as inline 8087 and 80387 code. It includes both 16-bit and 32-bit binaries and libraries. These features allow the compiler to generate DOS, OS/2 1.x and OS/2 2.0 applications. Besides Zortech C++ for IBM OS/2 2.0, Zortech C++ is also currently available for: DOS, 16-bit and 32-bit extended DOS, Microsoft Windows 3.x, Microsoft Windows NT, SCO UNIX and the Macintosh. This multiplatform and cross-platform support is particularly important for developers who need to maintain applications on different platforms.

Symantec's Zortech C++ offers a variety of options for numeric support. Applications can be compiled to contain no floating point support, a floating point emulator or 80x87 support. The product is IEEE-754 compliant with a coprocessor and in emulation mode. It also conforms to the Numerical C Extension Group (NCEG) draft specification.

We found that the Zortech C++ compiler quickly generates 16-bit and 32-bit globally optimized code. Optimizations may be turned on and off separately. To provide a rough measure of the quality of code generated by Zortech C++ a series of benchmarks were run against it and IBM C Set/2 1.00. The benchmarks were built and run on a Zenith MastersPort 386SLe (25MHz 80386SL, with 80387SXL). The benchmarks are essentially the same as those run for the IBM C Set/2 review [November 1992 Dot Exe].

The benchmarks Short, Long, Float and Double execute a set of operations on the C type of the same name. Func makes a call

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to a function which adds two arguments and returns the result. Each set of operations is executed in a loop 10 million times. Dhrystone 2.1 is Reinhold Weicker's benchmark program. The Dhrystone benchmark was designed to provide a realistic mix of the operations performed most often by normal applications (e.g., function calls, for/while loops, case statements and so forth). The results of the benchmarks are shown in Table 1. ASM Size is the size of only the code generated from the benchmark source code, it does not include code from the libraries.

Without exception Zortech C++ compiled in less time and produced smaller, slower code. The execution time results of the math benchmarks are roughly the same although C Set/2 has a slight edge. C Set/2's significantly better times in the Func and Dhrystone benchmarks are largely attributable to IBM's optlink linkage.

Libraries

Zortech C++ comes with a complete ANSI standard library, a class library called C++ Tools and a set of library extensions which provide access to the mouse, memory allocation and other functions.

The ANSI standard library may be used with single-threaded and multithreaded applications. It also provides double byte character support. Complete (C/C++ and assembly) source code for the ANSI standard library is included with Zortech C++.

Also included in the Zortech package is C++ Tools, a set of common operations, data types and structures. Some of the operations are: error recovery, file name parsing and manipulation, regular expression recognition and string pattern matching. Bit sets, time and date types, and BCD integers are some of the data types available. Finally, common

data structures such as bounds checking and dynamically allocated arrays, singly and doubly linked lists and binary trees are implemented as templates; thus allowing them to be used with any data type. The C++ Tools are provided in source form with example applications.

A group of library extensions (or packages) are also included. These packages provide functions such as: mouse support, EMM support and direct access to the display. Some of the packages are available only to DOS programs (e.g., the EMM package) and others are limited under OS/2.

Tools and Documentation

Aside from the compiler and libraries, Zortech C++ includes a small set of tools necessary for creating applications, support for IBM WorkFrame/2, a set of printed documentation and a very poorly written install program.

The product comes with BLINK (a linker), ZORLIB (a library manager), two make utilities, touch and a utility which generates an assembly listing from an object module. It does not include a debugger, an IDE, a resource compiler or include files or libraries for the OS/2 2.0 application programming interfaces. Thus, as a stand-alone product Zortech C++ is suitable only for generating generic text-mode applications. To acquire a complete development kit for OS/2, Symantec requires that users purchase the IBM OS/2 2.0 Toolkit and recommends purchasing IBM C Set/2 for the debugger and IBM WorkFrame/2 for the IDE. In short, to obtain a complete OS/2 development environment from Symantec, you must first buy a complete development environment from IBM.

Ironically, IBM WorkFrame/2 support in Zortech C++ is minimal. It consists of three files: a language profile and two dynamic link libraries which provide graphical access to the compiler and linker options. There are a number of problems with the dynamic link libraries. First, there are several small but obvious bugs in the dialog boxes. For example, the Memory Model group on the Code Generation Options page does not display the current setting when the dialog box is opened. Second, many options are not supported directly in the dialog boxes. For example, "/CO" must be typed in a generic "Linker Options" entry field to make the linker generate debug information. For such a common selection there should be a button dedicated to the task. Third, no on-line help is provided for any of the options. Fourth, the make file creation tool is not supported.

The printed documentation included with Zortech C++ consists of five soft-bound manuals. The one short manual that provides nearly all of the OS/2 specific information for Zortech C++ is full of technical inaccuracies and appears to have been quickly updated from a previous version of Zortech C++ for OS/2 1.x. The other manuals are more informative and cover topics directed at users of all versions of Zortech C++. There is no on-line help or documentation included with Zortech C++.

Finally, the install program included with Zortech C++ contains such obvious bugs that it seems unlikely that it was ever tested. First, the install program will abort the installation if less than 18MB of disk space is available; Zortech C++ only requires 7.5MB.

Zortech C++ for IBM OS/2 2.0, Version 3.1

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Apparently, the install program was a quick port from the Windows install program that doesn't account for the reduced disk space requirements. Second, the program places the WorkFrame/2 support files in the hard-coded directories "C:\IBMWF" and "C:\IBMWF\DLL." Needless to say, Zortech C++ support will not show up in WorkFrame/2 if WorkFrame/2 is installed on another drive. Third, the install program crashes if the CONFIG.SYS file has already been updated from a previous installation.

Summary

Symantec has put minimal effort into developing Zortech C++ for IBM OS/2 2.0. Zortech C++ is a capable ANSI C and C++ compiler but little else. For those who absolutely must have the features of Zortech C++ now—C++ and multiplatform support—Symantec's offering may be palatable. For all others: wait a bit longer for something better to come along. ♦

Todd Crowe is a UNIX/UNOCOS kernel developer for Cray Research, Inc. He has been programming for OS/2 since April 1989.

TABLE 1

	Compile Time ¹ (seconds)	ASM Size ² (bytes)	EXE Size ² (bytes)	Execution Time ³ (seconds)
Short				
C Set/2	6.91	125	16896	52.22
Zortech C++	3.13	97	4624	52.97
Long				
C Set/2	6.97	117	16896	49.72
Zortech C++	3.16	91	4624	53.00
Float				
C Set/2	6.90	124	22528	256.34
Zortech C++ ⁴	3.09	112	4624	274.75
Double				
C Set/2	7.03	144	22528	303.75
Zortech C++ ⁴	3.10	132	4624	320.60
Func				
C Set/2	7.09	50	16896	24.72
Zortech C++	2.97	40	4624	32.50
				Execution Speed ³ (in Dhrystones)
Dhrystone 2.1				
C Set/2	16.59	4826	53760	8403.3
Zortech C++	9.63	4382	25104	6802.7

¹Default options only

²IBM C Set/2 compiled with: `icc -O -G3`
Zortech C++ compiled with: `ztc -o+space`

³IBM C Set/2 compiled with: `icc -O -G3`
Zortech C++ compiled with: `ztc -o`

⁴-ff flag also used

Sneak Peeks— Lotus 1-2-3 2.0 and Freelance Graphics 2.0

REVIEWED BY HERB TYSON

If, like some users, you've been avoiding Lotus products because of a perceived "We'll do it our way mindset," you may be pleasantly surprised at how much you'll like the new 1-2-3 and Freelance Graphics for OS/2. In a unique blend of Workplace Shell (WPS) compatibility, Lotus familiarity and ingenuity, Lotus has managed to create a powerful and compelling spreadsheet and presentation graphics combination for OS/2 2.0.

The Desktop Paradigm

Both 1-2-3 and Freelance Graphics offer a novel and powerful implementation of WPS. The Lotus programs create their own desktop for managing files and tasks. When the 1-2-3 or Freelance desktop is showing, you can open Lotus files by dragging them from any WPS folder and dropping them directly into the Lotus work area. When you minimize a worksheet or other document, it is represented by an icon at the bottom of the Lotus Desktop—inside the Lotus window. You can then drag that icon almost anywhere else in the OS/2 Desktop for the expected effect. Drag it to the printer, and it prints. Drag it to the shredder—kiss it goodbye. Drag it to another folder, and it gets moved, while remaining loaded in the current Lotus window. Drag it to the Drive A: icon, and it gets copied to A:. If you're using long file names, the long name is remembered as well.

At first, all this dragging and dropping might seem a little gimmicky and pretentious. After all, OS/2 has a desktop already—why does Lotus need its own? The answer is power. Far from being a gimmick, 1-2-3 and Freelance Graphics can save and load different desktops from .DSK files. Similar to an OS/2 Work Area (see TNT, page 57, for more details), each desktop file represents a saved working state, consisting of a given set of spreadsheets, graphics, presentations and so on. If you have distinct sets of spreadsheets, graphs and Freelance Graphics presentation files you need for different projects and accounts, this feature is a tremendous time saver.

Also a time saver, when used together, 1-2-3 and Freelance Graphics seem like a single program. They even share some of the

same programming code, making them more memory efficient when used together. The operation is smooth and seamless. If you open a worksheet file while in Freelance, or a presentation file while in 1-2-3, the necessary resources are automatically loaded. On the first such cross-open, you will notice a definite lag as any additional modules needed are stuffed into memory. Thereafter, opening files for either program is faster. On the window list, however, only the single program—whichever one you started first—is shown. Both programs also use Lotus' SmartIcons, as will the forthcoming Ami Pro. When 1-2-3 is initiated by opening a worksheet from within Freelance, the appropriate context-sensitive (and user-customized) SmartIcon set is automatically used as well.

Freelance Graphics—Easy GUI for Quick Presentations

Freelance Graphics is a Graphical User Interface (GUI) "fill-in-the-blanks" tool for creating business graphics or "presentations" from data. In Freelance terms, a presentation is a set of related graphics. When you start Freelance Graphics, you are asked if you want to create a new presentation or work on an existing one. If you're creating a new presentation, Lotus displays a list of 42 pre-designed SmartMaster (boiler-plate) presentation layout designs. You can either modify an existing SmartMaster or ignore the choices and build a presentation from scratch. If your purpose is to create usable and effective slides, posters or document covers in a hurry, Freelance Graphics fits the bill.

Freelance Graphics is also flexible enough that you can change anything you don't like with minimal fuss. Most people find it much easier to modify an existing presentation layout than to build a new one from the ground up. Lotus anticipates and builds on this fact very effectively. To get you up and running in a hurry, Freelance Graphics comes with three booklets in addition to the larger user's guide and Graph Tool handbook. The best of the three booklets is a 60-pager called SmartStart. In less than an hour, this booklet will have you creating effective and impressive presentation graphics.

Lotus 1-2-3—New, but Familiar

If you're already a Lotus 1-2-3 and OS/2 2 user, you're going to love 1-2-3 2.0 for OS/2. It combines much of the familiar feel and terminology of 1-2-3 with the power of OS/2's WPS. If you're approaching 1-2-3 from a different perspective, however, you might very well hate it for the first hour or two. After the first hour, however, something indeed happens. Slowly but surely, you start

to see how it fits together. A few days into it, and you might very well start to love it.

Lotus 1-2-3 2.0 for OS/2 is an interesting blend of old and new. If you haven't used 1-2-3 in the past six or seven years, you will still find some remnants of the original 1-2-3. Not only do you have the choice of using the mostly-CUA menu, the mouse or customizable SmartIcons, but the old familiar/commands as well. One complaint users might have, however, is that underlined menu letters—called accelerators—require two separate key actions to access. You must press Alt followed by an accelerator letter to access a main menu item—similar to the method used by the Enhanced PMEditor that comes with OS/2. This differs from the more common practice which lets you press Alt and the accelerator letter at the same time.

One of the nicest features of 1-2-3 2.0 for OS/2 is the multi-dimensional layering of worksheets. Each spreadsheet extends 256 columns by 8,192 rows, by 256 sheets. In effect, you get a three-dimensional data space instead of the usual two dimensions. This allows you, for example, to set up separate worksheets with parallel structures by year, person, project or other dimensions crucial to presenting data and solving a problem.

Every Silver Lining...

Overall, Lotus' new 32-bit applications are powerful, industrial-strength tools for OS/2. As you might expect, however, these tools don't come without a price. Perhaps the biggest price is memory. Used individually, 1-2-3 and Freelance each seem to need about four megabytes of memory. Used together, however, they use only about six megabytes. Of course, the word "only" is used very advisedly. Even so, Lotus points out that these are large, powerful and highly capable applications. You can't economically and expeditiously create tools of this caliber without using memory. While future releases may be optimized somewhat, the level of complexity will prevent them from ever being as lean as their predecessors.

OS/2 purists are likely to fault Lotus' help system. While very useful and informative, it doesn't use the standard hypertext OS/2 help engine. Instead, both 1-2-3 and Freelance Graphics use

1-2-3 2.0 and Freelance Graphics 2.0 for OS/2

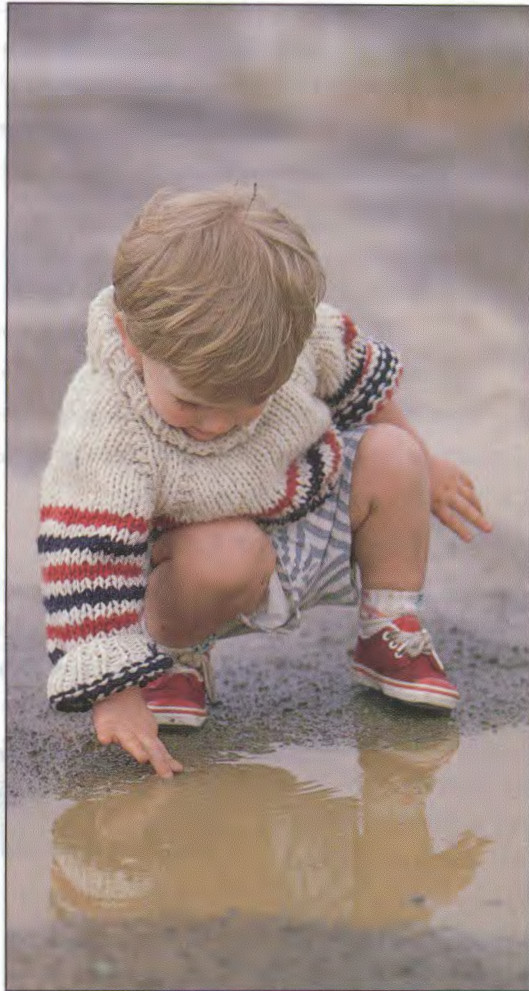
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continued on page 87

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SOMEHOW
THE PLEASURE AND PAIN
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PROMOTES AN
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OF LEARNING.

Enabling Lea

Simplifying the programming of multimedia may help educators reach out to many individuals the system previously considered learning disabled. And beyond.

BY HANK KIEWER

Multimedia is a word that strikes both hope and fear in the minds of those of us who teach or train others. And with good reason. The use of color, graphics, animation and sound offers some exciting alternatives to the static nature of written presentations. Restraining this excitement is the fear that the technology, while holding promise, is too complicated to learn.

And for many, fear and uncertainty stem from the feeling that by appealing to only a few of the senses we use for learning, we mask some important elements contributing to the learning process itself. Just how real are these concerns? Let's step back for a moment and look at some modes of learning and their relationship to multimedia.

At the time of birth our senses are sufficiently developed so that we immediately begin assimilating information about the world around us—albeit in some cases this is raw, unfiltered data. In the first few years of life, we learn to recognize more precisely objects by touch, taste, sight, smell and sound. Some of what we learn is associated with pleasure and some with pain or other unpleasant experiences. And we learn complex language skills. All of it accomplished without reading a book of instructions or hearing a lecture. Somehow the pleasure and pain of our existence in a sensory-rich environment promote an enormous amount of learning.

Yet a child who learned complex systems of communication by the age of two or three might by the age of eight or nine be labeled

Learning through Multimedia

as learning disabled. Why? Tradition! Our "educational tradition" expects that a child by that age should learn in an unenlivened environment—restricting educational sensorial intake to modes that include reading, listening to lecture-like material and performing minimal physical and mental exercises. Not everyone thrives under such stimulus.

Those who cannot perform educationally under those conditions are labelled "learning disabled." But time and again we discover through intensive personal attention to so-called learning disabled persons, that it is the unenlivened sensory environment that leads to their learning disability. For some individuals, the question is whether the person or system is disabled.

How do we attack this problem with multimedia? First of course, we must identify those individuals who can learn but via a different stimulus package.

So what is the connection to multimedia? Computer-driven multimedia has the ability to enrich a small part of the sensory environment with text, sound, visual images and visual animation. It can respond to human interaction via touch screens, a pointing device, a keyboard and, to some extent, voice. A computer screen is certainly not the best source for reading text. I find the printed page much easier to read. But a screen transforms into a lively and engrossing visual source when it becomes interactive with the individual.

This visual stimulation can be further augmented by sound in the form of music. While a computer is capable of producing that music, it is probably not the most efficient medium. The CD is more practical because a selection can be made more quickly and with less hassle. Likewise, a computer can easily control the selection of tracks on a CD.

What this finally boils down to is that computer-driven multimedia has tremendous value, but is only part of a total environment. Wise use of multimedia recognizes both actual and practical limitations, then develops an educational program to use multimedia together with other means of communication. Effective

education requires proper use of the world's most powerful computer, the human brain, to plan the educational experience and establish an environment conducive to learning.

The use of a multimedia computer is an important part of the total picture, but will be used properly only when its strengths and its limitations are properly understood and incorporated into the overall plan. James G. Smith, in the January/February issue of the *SALT Newsletter*, published by the Society for Accelerative Learning and Teaching, stated his concerns about multimedia in corporate education. About some of the existing multimedia educational material he asks, "Where is the great music for relaxation and learning value? ...Where are the peripherals? Where is the fun in practice, in elaboration exercises?" He is looking for a total educational experience that involves right-brain learning with music, colorful charts and posters (peripherals) and hands-on exercises that require the participant to physically do something related to the learning experience. The real issue here is that multimedia is a potent tool, but it is only one of many important tools in the "learning bag."

If computer-driven multimedia is to become pervasive as an educational tool in the classroom, teachers must be able to adapt material to their own use or develop their own material. Authoring tools will fail to find widespread use if they require programming skills to use them. This is the key to the whole question. If the teacher must write a series of instructions to control a presentation or a self-study unit, it matters little whether the instructions are called a "coding language" or a script. In either case the skills required may be foreign to a majority of instructors who are potential users of the tool.

For example when my self-study unit reaches an evaluation stage, I may want to ask a series of questions that relate to the material just covered. I want to determine from the answers whether remedial self-study instruction needs to take place or whether the student is ready to progress to the next unit. I may be more interested in various patterns of answers than in answers to individual

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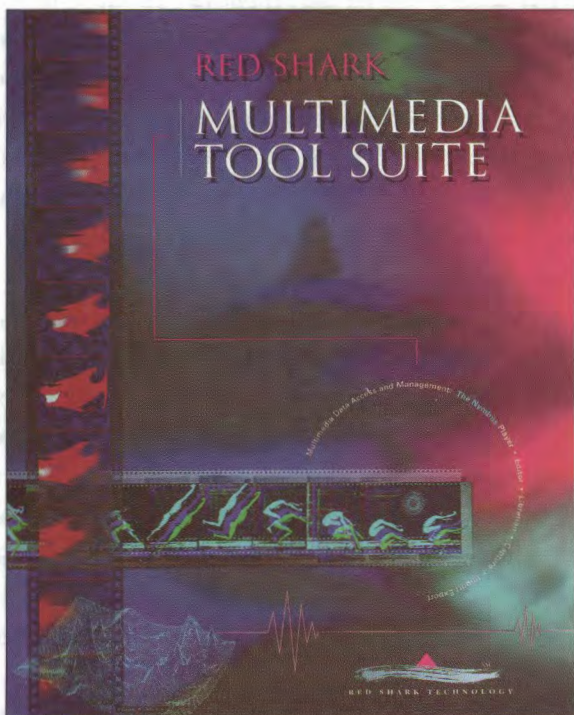
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MULTIMEDIA

questions in order to determine which type of remedial instruction is appropriate. I may determine that a series of four multiple-choice questions reveal three possible choices for remedial action.

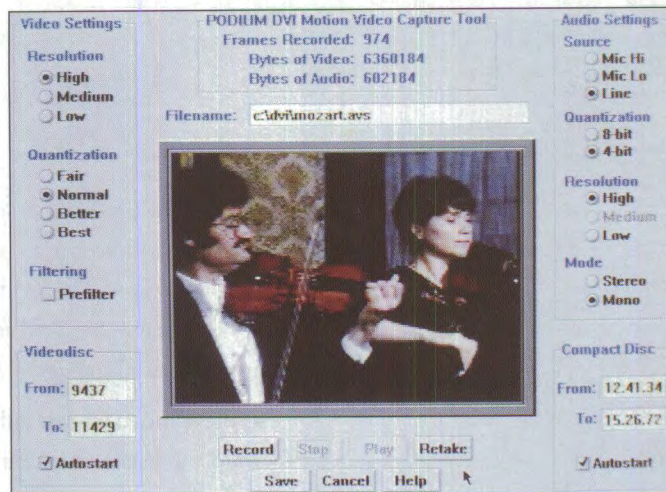
Supposing that answers of DA*B (where * can represent any answer) requires a certain remedial action while CAAB and BAC* represent other remedial actions. Some otherwise good tools on the market today require me to use IF ... THEN ... ELSE logic to test individual responses in order to find the desired combinations. I have programming skills, so I can handle it, but what about the majority of the teaching population? Even with programming skills I would prefer to match patterns of answers against the entry point for remedial work. I would like an authoring tool that lets me ask the questions and then work with the patterns, perhaps using a response "template," without using a coding language or script to do the redirection. It seems to me that, since multimedia is a good tool for presenting information in a manner that is easy to understand, why not use multimedia as the tool to build multimedia education? Scripts and commands are fine for programmers, but are programmers our primary audience?

So here is my five-point "wish list" for the multimedia industry's needs in an authoring tool.

1. Find my stuff. At last count, I had over 1,850 different custom-made computer graphics I use for presentations. This collection of graphics includes topics ranging from how to deal with death and dying to presentations on computer architecture. I want an authoring system that lets me use something like a card catalog to search for graphics by a keyword (index) or a phrase. I should be able to apply multiple keywords to each graphic or graphic sequence. The results of the search should allow me to view reduced size images, up to nine at a time, so that I can select without delay the image or images that I want to use. I want to be able to place them quickly and appropriately in my presentation. Today I often spend more time looking for an existing graphic than it would take to redraw it from scratch. I don't like to waste time in that manner.

2. An integrated authoring tool. I want to use the same tool (or companion tools) to prepare self-study educational material, slide shows, interactive stand-up presentations and printed handouts with numbered, reduced-size graphics on separately numbered pages.

3. Numbering the graphics. I would like to have an efficient and unique way to identify each graphic in a presentation after the presentation is organized. A particular graphic might be the third



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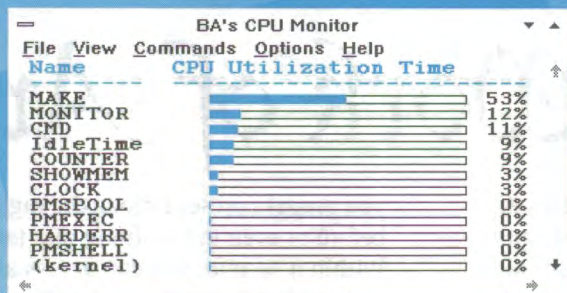
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graphic in one presentation and the 141st graphic in another. So I don't want the number to be directly associated with the library copy of the graphic. In addition, when I revise a presentation and remove some graphics and add others, I don't want to go back and renumber everything again. Computers can do that for me.

4. View and mark raw video footage. I want to be able to move forward and backward at varying speeds through digital "footage" while looking for starting and ending sequences, then mark them appropriately. I also want to index intermediate points in a sequence so that they can be recalled quickly during the authoring phase. These sequences and indexes should be entered easily in the "card catalog" suggested earlier.

5. Multiple response template. In self-study material, I want to ask a series of questions, then route the student to remedial work, if necessary, by selecting the route based on a "template" of the responses. I don't want to select the route by programming it using IF ... THEN ... ELSE logic.

These are but the first steps required to unleash the power of multimedia for educators and users whose careers rely on accessible tools rather than programming skills. And while we have focussed on the learning disabled, the whole notion of simplified programming really addresses the mass proliferation of multimedia as an educator's tool. My five simple requests should be enough to keep a good programmer off the streets and out of trouble for a day or two. But if you can get through those, call me. I have plenty more. ♦

Contributing writer Hank Kliewer is a PC and AS/400 consultant and owner of Rochester Systems Advisors, Rochester, Minnesota.

From DOS to Presentation Manager in One Day

BY CAREY GREGORY

Now that OS/2 has established a significant presence in the PC marketplace, many developers will find themselves programming for the OS/2 Presentation Manager (PM) for the first time. For those with prior experience programming event-driven systems such as Microsoft Windows, the change should be relatively straightforward. However, for those with no prior experience with event-driven systems, the first phase of the learning curve can be steep. In this article I'll try to flatten out that curve for you and show you how to get your first PM program up and running in a single day.

Attitude Adjustment

Event-driven systems such as PM require you to reverse the procedural programming model. In a procedural environment, the application program calls system functions to prompt the user and obtain input. The application program has strict control over the order and timing of events. In contrast, a PM program presents a graphical representation of all the available objects and actions the program supports and allows the user to manipulate them at will. In an event-driven environment such as PM, it's the user who primarily controls the order and timing of events. The task of a PM program is to respond to the user's actions quickly and efficiently, in virtually any order and to impose the fewest number of restrictions possible. The programming problem changes from one of planning sequences that maintain acceptable program states to one of handling nearly any program state and tolerating unacceptable states as long as feasible.

You should also keep in mind that OS/2 is a multi-tasking operating system, and as such it is always possible for the user to run other programs simultaneously, including more than one instance of your program. Though OS/2 will assure that all programs receive their own private execution environment, it's up to you to coordinate

LISTING 1 - THE MAIN PROGRAM

```
#define INCL_PM           // include all PM constructs
#define INCL_DOS          // include all base o/s constructs

#include <os2.h>
#include <stdio.h>
#include <memory.h>

#include "dos2pm.h"



### Data Definitions



typedef struct _GLOBALDATA // global program data
{
    HABh;                // anchor block handle
    HMqhmq;              // message queue handle
    HWND  hFrame,        // frame window handle
        hClient,         // client window handle
        hMenu;           // application menu window handle
}
GLOBALDATA;



### Function Prototypes



int      cdecl           main(int, char **);
static  HWND            CreateWindow(GLOBALDATA *);
static  MRESULT EXPENTRY ClientWndProc(HWND, ULONG,
                                     MPARAM, MPARAM);
static  MRESULT         ClientWndInit(HWND, GLOBALDATA
                                     *);
static  void             FileOpen(HWND, GLOBALDATA *);
static  void             FileClose(HWND, GLOBALDATA *);



### main()



int cdecl main(int argc, char **argv)
{
    QMSG          qmsg;
    GLOBALDATA    GlobalData;

    memset(&GlobalData, 0, sizeof(GlobalData));

    /*Initialize PM and save the anchor block handle. This
    call is specific to the calling thread, not the
    application. If additional PM threads are necessary,
    each must call WinInitialize.*/

    GlobalData.hab = WinInitialize(0);

    /*Create a PM message queue. The default queue size is
    10 messages which is sufficient for most applications.*/

    GlobalData.hmq = WinCreateMsgQueue(GlobalData.hab, 0);
```


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access to shared resources such as files. For example, if your program automatically creates a file, you should devise an algorithm for generating unique file names. If you were to use a single, hard-coded file name and the user started two instances of your program, the two instances would encounter a conflict on the file.

Once you've made the necessary mental adjustments, you may actually find event-driven programming easier in some ways. For example, there is usually less state information to be maintained than in a procedural program. In most cases PM will maintain state information for you while simultaneously providing a visual indication to the user. For instance, if your program requires the user to enter a password before opening certain files, you can simply disable the **File-Open** menu item instead of sprinkling if statements throughout your code to enforce the rule. If the user tries to select the item anyway, PM will emit a beep and ignore the selection. Your program remains unaware that anything happened.

Anatomy of a PM Program

All PM programs are composed of four major pieces: an initialization section, a message dispatch loop, a termination section and one or more window procedures. The initialization section and dispatch loops are typically found within the `main()` function. Window procedures are always separate functions.

Initialization

Listing 1 shows the data declarations, initialization, dispatch loop and termination logic for a typical PM program. Note the first several lines in which I define the named constants `INCL_PM` and `INCL_DOS`. The OS/2 toolkit uses a very convenient header file inclusion scheme. There are many header files with complex interrelationships, and determining the correct set of files and the correct order would be difficult. Hence, the designers provided a set of named constants that control the entire process. You need only to define one or more named constants and then include the root file, `os2.h`. I generally use the `INCL_PM` and `INCL_DOS` constants which cause the entire set of PM and base operating system header files to be included. There are many other less broad constants that can be used if compile time is more of an issue for you (e.g., `INCL_WIN`, `INCL_DOSFILEMGR` and so forth).

```
/*Register the client window class. The last parameter is
the number of bytes of reserved storage to allocate for
every instance of windows in the class.*/
```

```
if (WinRegisterClass(GlobalData.hab, CLASSNAME,
    ClientWndProc,
        CS_SIZEREDRAW, sizeof(GLOBALDATA *)))
{
    // Create the frame and client windows.

    if (CreateWindow(&GlobalData))
    {
        // Dispatch messages until WM_QUIT is received.

        while (WinGetMsg(GlobalData.hab, &qmsg, NULL, 0, 0))
            WinDispatchMsg(GlobalData.hab, &qmsg);
    }

    // Destroy the message queue.

    WinDestroyMsgQueue(GlobalData.hmq);

    // Terminate use of PM and release all resources.

    WinTerminate(GlobalData.hab);

    return (0);
}
```

LISTING 2 - THE CREATEWINDOW FUNCTION

```
static HWND CreateWindow(GLOBALDATA *pGlobalData)
{
    FRAMECDATA    fcdata;
    HWND          hFrame, hClient;
    SWP           swp;

    // Ask PM for a default size and position for the window.

    WinQueryTaskSizePos(pGlobalData->hab, 0, &swp);
    /*Set the frame control flags. This frame will have a
    size border, system menu, application menu, min/max
    buttons, and a title bar. */

    memset(&fcdata, 0, sizeof(fcdata));

    fcdata.cb = sizeof(fcdata);
    fcdata.idResources = ID_FRAME;
    fcdata.flCreateFlags = FCF_SIZEORDER | FCF_SYSMENU |
        FCF_MENU | FCF_MINMAX |
        FCF_TITLEBAR | FCF_TASKLIST;

    // Create the frame window as child of the desktop window.

    hFrame = WinCreateWindow(HWND_DESKTOP, WC_FRAME, NULL,
        FS_TASKLIST | FS_SIZEORDER, 0, 0, 0, 0,
        HWND_DESKTOP, HWND_TOP, ID_FRAME,
        &fcdata, NULL);

    pGlobalData->hFrame = hFrame;

    // Obtain a handle to the application menu window.

    pGlobalData->hMenu = WinWindowFromID(hFrame, FID_MENU);

    /* Now create the client window as a child of the frame
    window. */
```


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```
hClient = WinCreateWindow(hFrame, CLASSNAME, NULL, 0, 0,
    0, 0, 0, hFrame, HWND_BOTTOM, FID_CLIENT,
    pGlobalData, NULL);

pGlobalData->hClient = hClient;

// Activate, size, and position the window.

WinSetWindowPos(hFrame, HWND_TOP, swp.x, swp.y, swp.cx,
    swp.cy, SWP_SIZE|SWP_MOVE|SWP_SHOW|SWP_ACTIVATE
    |SWP_ZORDER);

return (hFrame);
}
```

LISTING 3 - THE CLIENT WINDOW PROCEDURE

```
static MRESULT EXPENTRY ClientWndProc(HWND hwnd, ULONG msg,
    MPARAM mp1, MPARAM mp2)
{
    GLOBALDATA *pGlobalData;
    HPS hps;
    RECTL rcl;
    MRESULT mr;

    switch (msg)
    {
        case WM_CREATE:
            // On the WM_CREATE message, mp1 contains the pointer
            // that was passed to WinCreateWindow. In this case it
            // will be a pointer to a GLOBALDATA structure. The
            // ClientWndInit function will save the pointer in the
            // window's reserved memory for later use.
            //
            // If the ClientWndInit function encounters an error,
            // it returns TRUE which will cause PM to terminate
            // the window creation process, otherwise it returns
            // FALSE in which case PM will complete the creation
            // process.

            pGlobalData = (GLOBALDATA *)PVOIDFROMMP(mp1);
            return (ClientWndInit(hwnd, pGlobalData));

        case WM_CLOSE:
            /*The WM_CLOSE message results from the user
            selecting Close from the system menu, or the file-exit
            menu item. It can also be posted programmatically,
            though it's usually considered bad manners to
            terminate without the user's approval.
            //
            First, retrieve the pointer to the global data
            structure which is stored at index location 0 in the
            window's reserved memory.
            //
            Next, check to see if a file is currently open by
            querying the state of the file-close menu item. If
            the item is enabled, a file is open so confirm with
            the user before closing the file and exiting.
            //
            Finally, implement the WM_CLOSE message by simply
            posting a WM_QUIT message to ourself. This causes
            the message dispatch loop to terminate, resulting in
            an orderly termination of the app. */

            pGlobalData = (GLOBALDATA *)WinQueryWindowPtr(hwnd, 0);
```

Although I've included `stdio.h`, keep in mind that a PM program cannot use character I/O to `stdin` and `stdout`. However, `stdio.h` is a convenient source of definitions for common items such as `TRUE`, `FALSE` and `NULL`.

Since there are several important variables that need to be retained for downstream use, I've declared a data structure (called `GLOBALDATA`) to encapsulate them and made it a local variable in the `main()` function. These variables could be declared as globals, but I strongly recommend avoiding globals in PM programs, especially if the program will be multithreaded or support more than one type of window. When we examine the window procedure in detail, we'll see how this data structure is accessed.

The initialization process shown in Listing 1 is quite simple and begins with a call to `WinInitialize()`. This establishes a connection to PM which returns a handle to an anchor block. An anchor block handle is simply a magic cookie required by a number of PM functions.

The next step is to create a message queue by calling `WinCreateMsgQueue()`. The default queue size is 10 messages which is adequate for most applications. If the application processes an unusually high volume of messages or if the processing of messages is slow, a larger queue size should be used. However, increasing the queue size will not fix a program that fails to process messages expeditiously. The rule of thumb is one tenth of a second per message. This requirement is not as stringent as it sounds, especially on today's machines. A great deal of code can be executed in that amount of time, and, in general, performance only becomes a problem if the program accesses files on the same thread that is processing messages. Remember that no matter how fast your hard drive may be, a file just might happen to reside on a diskette that's not inserted, or perhaps on an overburdened server. In these cases the delay can be substantial and may cause your program to crash, regardless of the queue size. The only robust method for accessing files within a PM program is to use a second, non-PM thread to handle file I/O.

Prior to creating a window, you must register the window class with `WinRegisterClass()` unless you're creating an instance of a predefined public class. Named constants are provided for all of the predefined public classes such as buttons, menus and frame windows. This step

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allows you to specify a class name, style flags, the window procedure for the class and the number of bytes of reserved memory to allocate for each instance of the window. I usually allocate four bytes per window in order to store a pointer to a data structure rather than storing a copy of the structure itself. I'll show how this works when we examine the window procedure.

Creating a Window

Once you've initialized PM, created a message queue and registered your window class, you can create a window. First, however, let's take a moment to examine the structure of the typical application window and the concepts of parent and owner relationships. The typical window presented by most applications is actually several windows arranged in two separate hierarchies: a parent/child hierarchy and an owner hierarchy. A frame window is typically the highest level window in both hierarchies (excluding the system desktop window). Frame windows are responsible for managing fundamental operations

```
mr = WinSendMsg(WinWindowFromID(pGlobalData->hFrame,
    FID_MENU), MM_QUERYITEMATTR,
    MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
    MPFROMSHORT(MIA_DISABLED));

if (LONGFROMMR(mr) != MIA_DISABLED)
{
    if (WinMessageBox(HWND_DESKTOP, hwnd,
        "Close file and exit?", "File is open", 0,
        MB_YESNO|MB_ICONQUESTION) == MBID_YES)
        FileClose(hwnd, pGlobalData);
    else
        return (MRFROMSHORT(0));
}

WinPostMsg(hwnd, WM_QUIT, 0L, 0L);
return (MRFROMSHORT(0));
```

case WM_PAINT:

```
/* This message is received whenever a portion of the
client window is invalidated. WinBeginPaint returns a
handle to a presentation space for the client window
along with the bounding rectangle of the area to be
painted. WinFillRect fills the rectangle with the default
window color. WinEndPaint signals PM that the paint is
complete, which validates the window and restores the
presentation space to its prior state. */
```

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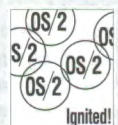
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```
hps = WinBeginPaint(hwnd, NULL, &rc1);
WinFillRect(hps, &rc1, SYSCLR_WINDOW);
WinEndPaint(hps);
return (MRFROMSHORT(0));

case WM_COMMAND:
/* This message is received when the user selects a menu item
or other control such as a push button. The low word of
mpl contains the id of the control that was selected. */

pGlobalData = (GLOBALDATA *)WinQueryWindowPtr(hwnd, 0);
switch (SHORT1FROMMP(mpl))
{
    case ID_FILE_OPEN:
        // Open a file. If a file is successfully opened,
        // the FileOpen function will enable the file-close
        // menu item and disable the file-open menu item.

        FileOpen(hwnd, pGlobalData);
        break;

    case ID_FILE_CLOSE:
        // Close the currently open file. The FileClose
        // function closes the currently open file, disables
        // the file-close menu item, and re-enables the
        // file-open menu item.

        FileClose(hwnd, pGlobalData);
        break;
}
```

such as sizing, moving and title bar display.

The function of a parent window is primarily visual, with the parent window defining the clipping boundaries of its child windows. If a window procedure attempts to draw outside the boundaries of its parent, PM will automatically clip the output so that no drawing appears beyond those boundaries. All windows must have a parent.

In addition to a parent, most windows also have an owner. The parent and owner are usually the same, but there are times when a different parent and owner are useful. Unlike the parent window whose purpose is primarily visual, the owner relationship is a functional one. When significant events occur in a window, it reports those events to its owner, not its parent. For example, when you resize a window by dragging its size border, the border window reports this event to its owner (a frame window) which then orchestrates the actual sizing operation. If a window reports no events, it does not need an owner. However, I consider it wise to supply one anyway

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since it may need one in the future and supplying one is not a significant task. When in doubt, make the parent and owner windows the same.

The rectangular area within the confines of a frame window is known as the client window. Unlike the frame window which is a predefined window class supplied by PM, you are responsible for managing the client window, and it's usually your primary interest when writing a PM program. A client window is nearly always a child of a frame window.

There are two ways to create a main application window. PM supplies the `WinCreateStdWindow()` function which will often suffice; but I generally prefer to create the frame and client window separately using `WinCreateWindow()`. Why? Primarily because `WinCreateStdWindow()` doesn't provide a means of passing data directly to the window procedure during the creation process, nor does it provide a means of specifying an owner window. My `CreateWindow()` function is fairly straightforward (see Listing 2). It begins by calling `WinQueryTaskSizePos()` in order to obtain a reasonable size and position for the window. If you prefer, you can specify a size and position, but the choice is more complex than it first appears due to differences between display devices.

My `CreateWindow()` function uses two calls to `WinCreateWindow()`. The first call creates the frame window, and the second call creates the client window. Note that the window procedure will receive the `WM_CREATE` message before the second call to `WinCreateWindow()` returns. The client window is created as a child of the frame window, which is in turn a child of the desktop window. Your main frame window should always be a child of the desktop window (`HWND_DESKTOP`). The function finishes by calling `WinSetWindowPos()` in order to size, position and activate the window.

When I create the client window, I pass a pointer to my `GLOBALDATA` structure in the next to the last parameter. This pointer will be passed to the window procedure with the `WM_CREATE` message. The window procedure attaches this pointer to the window by storing it in the window's reserved memory. The pointer can then be retrieved at any time by calling `WinQueryWindowPtr()`. This technique greatly simplifies the task of supporting multiple instances of a window, and I strongly

```
case ID_FILE_EXIT:
    /* The user selected file-exit. Simply posting a
    WM_CLOSE message to ourself will accomplish the
    task. We could place the close logic here, but
    that would result in duplicate code since we
    must have to handle the WM_CLOSE message anyway.
    As a general rule, you should associate a given
    behavior with a single message and implement
    that behavior elsewhere by posting the appropriate
    message to the window. */

    WinPostMsg(hwnd, WM_CLOSE, 0L, 0L);
    break;

}
return (MRFROMSHORT(0));

default:
    break;
}

/* Without exception every message must be processed.
Breaking out of the switch statement indicates that we
didn't handle the message, so call the default window
procedure to handle it. Some programmers prefer to place
this call under the default case above and return zero
here instead. I dislike that approach since it makes it
very easy to drop a message by falling out of the switch
statement unintentionally.*/

return (WinDefWindowProc(hwnd, msg, mp1, mp2));
}
```

ClientWndInit()

/* This function is called by the client window procedure in response to the `WM_CREATE` message. The value returned by this function is the value to be returned for the `WM_CREATE` message. */

```
static MRESULT ClientWndInit(HWND hwnd, GLOBALDATA
    *pGlobalData)
{
    HWND    hMenu;

    /* Save the pointer to the global data block at index
    position 0 in the window's reserved memory. */

    WinSetWindowPtr(hwnd, 0, (void *)pGlobalData);

    /*Guarantee the state of the file-open and file-close
    menu items. The file-close item is used to indicate the
    presence of an open file, so its initial setting is
    crucial. This step could be omitted by providing initial
    settings in the resource file, but the additional bullet-
    proofing provided by this code is worthwhile since it
    costs so little.*/

    WinSendMsg(pGlobalData->hMenu, MM_SETITEMATTR,
        MPFROM2SHORT(ID_FILE_OPEN, TRUE),
        MPFROM2SHORT(MIA_DISABLED, FALSE));

    WinSendMsg(pGlobalData->hMenu, MM_SETITEMATTR,
        MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
        MPFROM2SHORT(MIA_DISABLED, MIA_DISABLED));

    /*Return FALSE to indicate that PM should continue to
```


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```
create the window. Returning TRUE would cause PM to
abandon the window creation.*//
```

```
return (MRFROMSHORT(FALSE));
```

```
}
```

FileOpen()

```
static void FileOpen(HWND hwnd, GLOBALDATA *pGlobalData)
{
```

```
// Disable the File-Open menu item.
```

```
WinSendMsg(pGlobalData->hMenu, MM_SETITEMATTR,
MPFROM2SHORT(ID_FILE_OPEN, TRUE),
MPFROM2SHORT(MIA_DISABLED, MIA_DISABLED));
```

```
// Enable the File-Close menu item.
```

```
WinSendMsg(pGlobalData->hMenu, MM_SETITEMATTR,
MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
MPFROM2SHORT(MIA_DISABLED, FALSE));
```

```
return;
```

```
}
```

FileClose()

```
static void FileClose(HWND hwnd, GLOBALDATA *pGlobalData)
{
```

recommend it even if your program will support only a single instance.

The Message Dispatch Loop

By far the easiest section of any PM program is the message dispatch loop. It is also the most performance critical. Failure to process messages quickly will cause a PM program to crash. If at all possible, the dispatch logic should be nothing more than a two-line while loop in which messages are retrieved with `WinGetMsg()` and dispatched with `WinDispatchMsg()`. Conveniently, `WinGetMsg()` returns TRUE until a `WM_QUIT` message is retrieved, thereby allowing it to be used as the conditional expression in a while loop. Before adding code to this loop consider that it is executed once for every message posted to your application, and, since the number of messages a PM application processes is substantial, any code added to the loop will impose potentially significant performance penalties.

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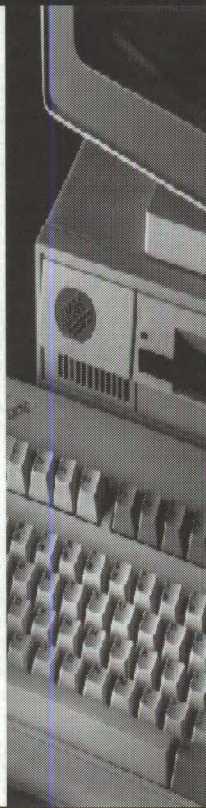
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CODE CACHE

The Window Procedure

Listing 3 shows a very simple but workable window procedure and its initialization function. Window procedures are almost always composed of a single switch statement based on the message id (the "msg" parameter). The unbending rule of message processing is that every message must be processed. Your procedure must process the message and return an appropriate value, or pass the message to PM's default window procedure, **WinDefWindowProc()**, and return the value it returns. You should not allow both functions to process a message.

The only messages my window procedure is required to process are the **WM_CREATE**, **WM_CLOSE** and **WM_COMMAND** messages. Even these could be eliminated and the program would still work (though it certainly wouldn't do much). By starting with a simple skeleton such as the one shown in Listing 3, you should be able to get a PM program up and running in very short order. Additional functionality can then be added a message at a time while maintaining a working, demonstrable program. Of course, most PM programs are far more complex than the one shown here, but hopefully this example will give you a feel for what's involved, and provide you with a manageable starting point. ♦

Carey E. Gregory is a technical consultant and president of Gateway Technologies Corporation, a Canton, Connecticut, firm specializing in OS/2 since 1988.

```
// Enable the File-Open menu item.

WinSendMsg(pGlobalData->hMenu, MM_SETITEMATTR,
           MPFROM2SHORT(ID_FILE_OPEN, TRUE),
           MPFROM2SHORT(MIA_DISABLED, FALSE));

// Disable the File-Close menu item.

WinSendMsg(pGlobalData->hMenu, MM_SETITEMATTR,
           MPFROM2SHORT(ID_FILE_CLOSE, TRUE),
           MPFROM2SHORT(MIA_DISABLED, MIA_DISABLED));

return;
}
```

LISTING 4 - THE HEADER FILE

```
#define CLASSNAME      "MyClientClass"

#define ID_FRAME        10

#define ID_FILE          100
#define ID_FILE_OPEN    101
#define ID_FILE_CLOSE    102
#define ID_FILE_EXIT    103
```

LISTING 5 - THE RESOURCE FILE

```
/* This file supplies the menu definition for the example
program. In addition to menus, a resource file can define
dialog boxes, icons, text strings, and other objects used by
a PM program. */
```

```
#include <os2.h>
#include "dos2pm.h"

MENU ID_FRAME
{
    SUBMENU "~File", ID_FILE, MIS_TEXT
    {
        MENUITEM "~Open...", ID_FILE_OPEN, MIS_TEXT
        MENUITEM "~Close", ID_FILE_CLOSE, MIS_TEXT
        MENUITEM SEPARATOR
        MENUITEM "E~xit", ID_FILE_EXIT, MIS_TEXT
    }
}
```




THE LAW

Legislation and Regulation for the Information Age

BY TIMOTHY J. BURGER

Hardball with Microsoft?

The Federal Trade Commission (FTC) still isn't acknowledging it, but the agency appears to be reaching the end of a two-and-a-half year antitrust investigation of software giant Microsoft. Several divisions of FTC have played roles in the probe, compiling a lengthy report. But it appears, no injunction will be sought.

After Microsoft chairman Bill Gates spent the preceding days lobbying the FTC at its Washington, D.C., headquarters, the commission on February 5 ended a three-hour meeting in a 2-2 tie vote, which deferred final resolution of its probe in favor of receiving more evidence. According to the newsletter, *FTC:Watch*, radical recommendations presented in a 250-page report to commissioners by staff investigators and attorneys included seeking a narrowly-written federal district court injunction limiting Microsoft's DOS licensing practices.

FTC:Watch editor Art Amolsch told "The Law" that the injunction now appears to be an unlikely course of action, after its revelation in the newsletter caused such a furor in the press and the industry. His publication said that the tie vote was caused by the abstention of Commissioner Roscoe Starek III, some of whose investment holdings require him to recuse himself from certain commission actions to avoid the possible appearance of conflict of interest. *FTC:Watch* quoted informed sources as saying that, during deliberations, Commissioner Mary Azcuenaga "expressed doubt that Microsoft's practices are anything more than legal volume discounts."

When the even number of commissioners realized that they wouldn't be able to get past a tie vote, they ended the meeting with a

discussion of how they would break the news to Microsoft and the public.

FTC spokeswoman Bonnie Jansen declined comment, releasing this statement on the February 5 meeting: "At a closed commission meeting today, to discuss staff recommendations regarding a non-public law-enforcement matter, the commission did not come to a final decision and will reconvene in the near future."

Microsoft marketing behavior on which FTC has focused includes the firm's practice of offering reduced-cost licensing to companies which agree to pay DOS royalties to Microsoft for every computer sold, regardless of whether every item really contained DOS. Companies which preferred to pay per DOS system actually installed ended up paying more per DOS unit. The agreement allegedly makes it difficult for other manufacturers to compete, allowing Microsoft to build what some say is an unfair monopoly. Also of interest to the FTC have been allegations that Microsoft modified its Windows operating system so that it couldn't directly run software produced by competitors.

Other possible routes are for FTC to actually concur with Microsoft's defense of its business m.o., which the firm has made behind closed doors to the commission, and then drop the probe altogether. Or Microsoft could agree to a consent decree under which it ceased certain objectionable practices without admitting any violations.

Also watching the FTC process carefully is Britain's Office of Fair Trading, according to *The Economist*, which maintains that the British office concerned with commercial misconduct is likely to take up the investigation if FTC determines that Microsoft has been dealing shadily.

But *FTC:Watch*, which has been way ahead of its journalistic competition in keeping track of the Microsoft probe, said that "While it is still possible" that FTC pit bulls will muster three or five votes against Microsoft, "insiders believe it unlikely."

Amolsch's newsletter notes that the Clinton transition team "assigned to the FTC urged the new administration to try" to streamline the process of bringing action against companies found to have engaged in unfair practices. The length of the process, influenced by the complexity of many cases, can logjam the commissioners, deterring them from taking decisive action.

Commerce Department News

- With Asia considered to be home to the "fastest-growing packaged software markets," Commerce's Office of Computers and Business Equipment sponsored a two-week "trade mission involving visits to Seoul, Korea; Kuala Lumpur, Malaysia; Singapore and Taipei, Taiwan," according to the most recent International Trade Administration newsletter, *Software International*. A similar mission to London and Paris is planned for June.

- The department cites Bureau of Labor Statistics figures as revealing that the domestic software industry saw a five percent increase in the number of people it employed between July 1991 and July 1992, when this number hit 401,600. This number includes: 159,000 in programming services; 136,500 in prepackaged software; and 106,100 in integrated systems design. ♦

Tim Burger is a reporter for Roll Call, the twice-weekly "Newspaper of Capitol Hill."



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Registration fee for Toronto, June 21-25, 1993. If payment is received on/or before May 21, 1993 the registration fee is \$795 (\$995 in Canadian funds).

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DATA DATES

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COMPILED BY KAREN THOMAS

APRIL 26-29

NATIONAL COMPUTER GRAPHICS ASSOCIATION

Philadelphia, PA

Get to the National Computer Graphics Association Conference if you're really serious about graphics tools because this is not the conference for schmoozers. The highlight of the show is the annual graphics awards given out each year for advancements in 3-D and other graphics techniques. Contact: (800) 225-NCGA

MAY 16-19

CORELDRAW INTERNATIONAL USER CONFERENCE

Washington, DC

Help prepare your enterprise for The Next Generation—the theme for First Annual CorelDRAW International User Conference. Noting the broad base of user support and proliferation of after-market products for CorelDRAW, Rick Altman and J.R. Schuman Associates have dedicated this new conference solely to CorelDRAW users. The seminars will follow three general categories: The Corel Campus (for novice users), The Power Room (for those who push CorelDRAW to its limits) and The Art Studio (where the focus will be on aesthetics).

Exhibitors will include various vendors with an interest in state-of-the-art computerized

graphics: service bureaus, training firms and graphics related software and hardware vendors. The conference will be held at the Grand Hyatt Washington. Whether you are the consummate power user or simply seeking to improve your artistic expression through CorelDRAW, this conference will have something for you.

For seminar information contact: Rick Altman, (408) 252-5448. For registration and exhibit information contact: J. R. Schuman Associates (617) 431-7922.

MAY 24-27

COMDEX/SPRING '93

Atlanta, GA

More than 75,000 people are expected to jam the Georgia World Congress Center for the annual Spring COMDEX. That includes some 4,000 international delegates. More than a thousand firms will be hawking their wares and hoping to arouse your interest and wallets. Among the expected technical accents will be OS/2, Unix Open Systems, networking, multimedia, mobile computing and channel distribution. The event is cojoined by Windows World '93 sponsored by Microsoft.

Contact: The Interface Group, (617) 449-6600.

MAY 27

PHOENIX PC USERS GROUP OS/2 SIG

Phoenix, AZ

Phoenix was the site of this year's Winter OS/2 Technical Interchange so the Phoenix PC Users Group OS/2 SIG should be up to par on late-breaking OS/2 developments. The OS/2 SIG meets the fourth Thursday of each month at 7PM. That puts the next one on May 27, just after Spring COMDEX and surely one with a lot to debate. Meetings are held at the User Group's Resource Center, 6122 N. 7th St. Esther Schindler is the head of the SIG and judging from her activity on the IBM CompuServe Forums, her OS/2 SIG should be a pretty lively affair.

Contact: Bill or Esther Schindler (602) 222-8511; CompuServe: 72241,1417

JUNE 21-25

OS/2 TECHNICAL INTERCHANGE

Toronto, Canada

The next OS/2 Technical Interchange will be held June 21-25 in Toronto. Patterned after the successful Interchange held February in Phoenix, the Canadian Interchange will also include daily breakfast and lunch, a reception and banquet, complimentary software products and a chance to meet with a spec-

trum of developers, MIS managers and LAN Systems experts. An extensive exhibit area will display the latest software and hardware developments in OS/2. If the Canadian affair is anything like the Phoenix extravaganza, OS/2 users and developers will find the Toronto conclave an indispensable event. Skill Dynamics, which is staging the Interchange, has set a fee of \$795 US for those reserving before May 21. Since the Phoenix event was quickly sold out, IBM is urging the OS/2 community to reserve early. *OS/2 Professional* is a leading sponsor of the Canadian Interchange and its representatives will be on hand to answer any questions about either the magazine or OS/2.

Contact: Skill Dynamics, (800) 661-2131.

JUNE 29-JULY 1

PC EXPO

New York, NY

Known for the Big Apple's oppressive heat, large numbers of Fortune 500 corporate buyers, interesting Manhattan parties and a friendly press office, PC Expo has been growing in attendance since its inception in 1983. Although the premiere New York conference is an expensive show to attend and exhibit, it continues to draw larger and larger

continued from page 69

Lotus' own help system. The existing help system is fine if you are acquainted with Lotus' approach to software, but it's less useful if you are coming from a different perspective. Also missing from the Lotus help system is the ability to search on keywords. Rather than pore through the documentation for two hours in a vain attempt to find the word Excel, one could just search on the word Excel to determine that Excel is not mentioned. A call to Lotus confirmed that 1-2-3 cannot import Excel worksheets (but the feature will likely be added by the next release).

While the methodology behind the help system can be faulted, the quantity of documentation cannot be: 1-2-3 comes with a setting up and quick start guide, a user's reference, an @Functions and macros reference, as well as a user's guide to 1-2-3, the Graph Tool and the Solver. As mentioned earlier, Freelance Graphics comes with four bound manuals of its own. One might pick a slight nit at the mode of presentation however. For the larger manuals, Lotus includes multiple, separately-indexed, manuals inside the same cover. This can make finding the proper index a bit tedious, not to mention locating the correct submanual. You can save yourself some index-hunting aggravation by affixing small

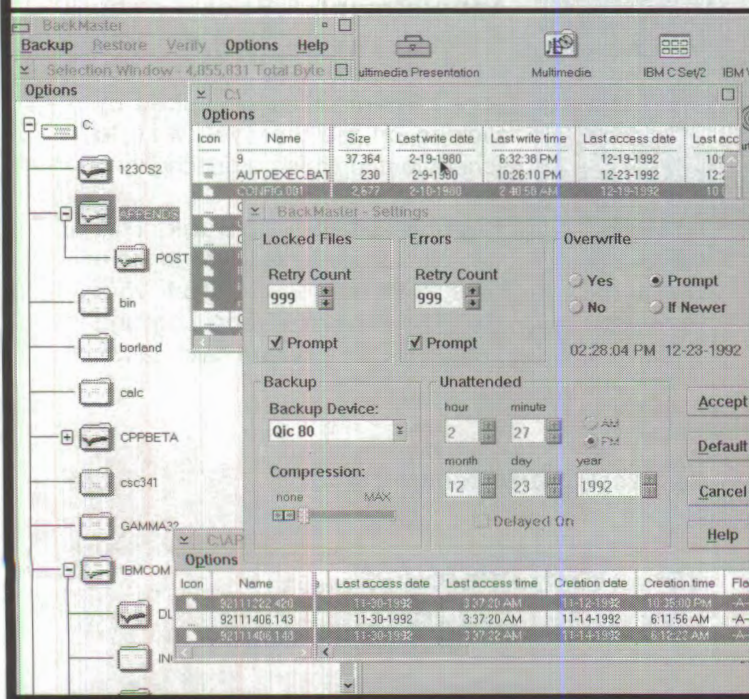
index tabs or tape to the first page of each index.

Summary

The first half of Lotus' SmartSuite is a formidable, multithreaded, industrial-strength addition to your industrial-strength operating system. If you plan to use 1-2-3 and Freelance together or in combination with other applications, you might want to run out and buy some extra RAM, quickly. You won't be sorry. In the case of 1-2-3 and Freelance, it's RAM well-spent. Both applications are powerful, reasonably quick and innovative implementations of the Workplace Shell. While not completely CUA and OS/2 compliant, Lotus is to be commended for going as far as it does. One last note: Lotus has at long last given up its historical practice of building roadblocks to effective system backups. You'll be happy to know that Lotus 1-2-3 for OS/2 is no longer copy-protected. ♦

Herb Tyson is a computer industry analyst and consultant whose clients include IBM. He is the author of several books, including 10 Minute Guide to OS/2 2, 101 Essential Word for Windows Tips and the forthcoming OS/2 Consultant.

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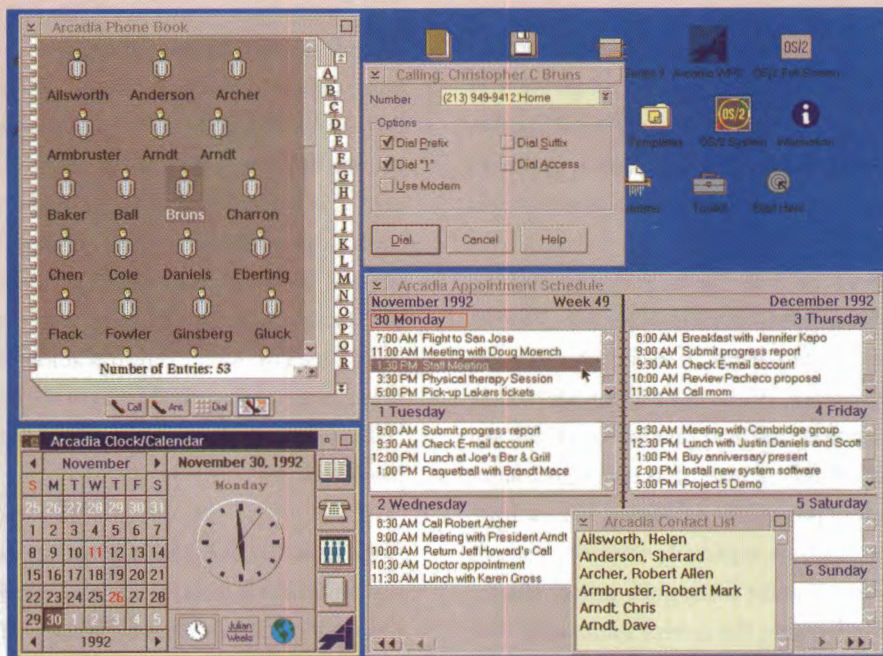
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Circle #33

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The Arcadia Workplace Companion (WPC) is a set of productivity tools designed specifically for the OS/2 Workplace Shell environment from the ground up! It adheres to Common User Access (CUA) '91 guidelines and completely integrates its various components in an object-oriented fashion. The WPC exploits all of the powerful new controls found within OS/2 2.0 including notebooks, containers, sliders, value sets, and spin buttons.

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Circle #24

MARKETLINE

Product News for the OS/2 User compiled by Marlene Semple

SCOOPS

Opera Systems tests Storage Management for large LANS

Opera Systems, Inc., is beta testing products that implement integrated network data center concepts, providing storage management for large PC LANs with hundreds to thousands of nodes. Production shipments will begin this summer.

Each fully configured Opera system provides up to 256 gigabytes of uncompressed data storage in one self-contained desk-side server. Opera/Libretto, the software

suite, uses object-oriented technology throughout its dispersed processing client/server architecture to support a variety of networks, topologies and desktops. At initial release the product will back up, restore, migrate and archive files under LAN Manager, Netware 3.X, OS/2 and Windows based PC systems.

Additionally, a platform independent GUI provides restore and retrieve tools for end users, allowing the admin-

istration staff to focus on other activities. A future release will support Vines, LAN Server EE, Macintosh, MS-DOS and UNIX based platforms.

The MSS-128d (Mass Storage Server) is a DAT-based storage system that holds up to 128 DAT cassettes and employs a four-axis robotics subsystem capable of placing any cassette in any of up to six DAT tape drives (which operate in parallel to improve performance). The

operating system and application software reside on the first disk, while the others aid in the streaming of data using disk-caching techniques. The system includes an eight-slot ISA or EISA based 486 server running OS/2 to handle all I/O, database, network and real time robotics activities.

Opera Systems, Inc., 100 Conifer Hill Dr., Suite 307, Danvers, MA 01923, (508) 750-4700.

New Products

Modular disk array for OS/2 and LAN Server

A new modular desktop disk array from Micropolis can add 560 megabytes to 28 gigabytes of data storage capacity to OS/2 and LAN Server systems. RAIDION LT, developed specifically for the OS/2 and LAN Server environment, will be shipping this month.

Users can add modules of the RAIDION LT array as their need for additional storage capacity grows. The fault tolerant disk array can service a wide range of OS/2 and LAN Server environments, from a single workstation with its own desktop RAID subsystem to hundreds of workstations in an enterprise-wide network. (RAID, a generic term, stands for Redundant Array of Inexpensive Disks.)

Each RAIDION LT module is equipped with a high-performance Micropolis 3.5-inch drive, its own power supply and a cooling fan. A "hot swap"



feature allows users to replace a failed module without interrupting array or host system operations. The user slides the failed module out of its slot and then slides the new module in, without removing any screws or cables.

RAIDION LT's OS/2 utility acts as an interface between the array subsystem and the host so the array appears as a single disk. It is controlled through a graphical user interface from the workstation or console.

The software incorporates an "online spare" feature that automatically activates a previously installed standby module in case a module fails. The data is reconstructed on the fly and rewritten to the online spare so that operation is continuous.

List price for a three-module RAIDION LT configuration ranges from \$8,960 for one gigabyte to \$12,600 for two gigabytes. Additional modules can be purchased for \$2,985 for 560 megabytes to \$4,200 for one gigabyte.

Micropolis Corporation, 21211 Nordhoff St., Chatsworth, CA 91311, (818) 709-3300.

Dancing with Choreographer 3.0

OS/2 and Windows developers might be dancing faster with Choreographer 3.0, an object-oriented tool for creating client/server and cooperative processing applications.

The new release of this GUI development environment is fully compatible between OS/2 and Windows. According to GUIDance Technologies, Inc., the Choreographer 3.0 tools, languages, GUI objects and runtimes for OS/2 and Windows are identical. This means that users of Choreography 3.0 can, for instance, design an application under OS/2 and deliver it under Windows. Or they can switch platforms after development is underway—or years later.

New features in the OS/2 version include an enhanced DisplayObject Editor for creating drag and drop screen elements; a single tool for debugging both code and runtime errors; and full support for 32-bit features in the kernel, Adobe Type Manager fonts and CUA '91 graphical components (spin buttons, sliders, value sets, notebooks, containers and drag and drop).

GUIDance Technologies, Inc., 800 Vinial St., Pittsburgh, PA 15212, (412) 231-1300.

Digitalk ships 32-bit PARTS Workbench

Digitalk is now shipping the 32-bit version of PARTS Workbench for OS/2 2.0, a client/server integration tool. PARTS (Parts Assembly and

Reuse Tool Set) is an open, client/server technology that makes the assembly and reuse of software components from different technologies easier than creating the components. The PARTS Workbench is the framework for the technology. The components can be written in Smalltalk/V, COBOL, C or other languages.

PARTS Workbench can be used standalone or in conjunction with Smalltalk/V. Users do not need to own Smalltalk/V or even be knowledgeable about object-oriented programming to create applications. The developers simply drag parts from a catalog into the workbench and then specify the interaction of the parts by visually wiring the parts together.

The new version of PARTS Workbench is 40 percent smaller than, and twice as fast as, the earlier release because of its new 32-bit architecture. Its new features include support for OS/2's drag and drop protocol, and for both 16-bit and 32-bit DLLs.

PARTS Workbench for OS/2 2.0 is available at a list price of \$1,995. It is free to registered users of PARTS Workbench version 1.0.

Digitalk, Inc., 9841 Airport Blvd., Los Angeles, CA 90045, (310) 645-1082.

DB2 compatible database server

The first database server for OS/2 2.0 that is fully compatible with DB2 is now available. The XDB-Server, a 32-bit, high-performance, multiuser

database system, is based on client/server technology.

The XDB-Server uses the same data storage architecture, security facilities and location naming conventions as main-frame DB2. Users access data by using logical names of objects without having to refer to their physical locations on disk. The mapping is provided by the XDB-Server. Users can access tables in multiple databases from within one session. A single copy of the XDB SQL Engine can support multiple locations.

XDB Systems, Inc., 14700 Sweitzer Lane, Laurel, MD 20707-2921, (301) 317-6800.

GUI design tool with C++ framework

XVT-Design++, a software development package, will begin shipping Q2. It includes an interactive design tool for graphical user interfaces and a C++ application framework of GUI objects. Developers can modify the framework for the application they are developing rather than create their own objects.

With the XVT Portability Toolkit, developers can port their XVT-Design++ applications across seven popular GUIs, as well as character-based systems for UNIX, DOS or VMS.

An XVT library and an XVT-certified C++ compiler are required.

Because the C++ development environment and the use of frameworks is new to many developers, XVT Software offers support, consulting and

training services for XVT-Design++.

The price for XVT-Design++ is \$1,395 on Intel 486 and similar systems and \$3,095 on UNIX workstations.

XVT Software Inc., 4900 Pearl East Circle, Boulder, CO 80301 (303) 443-4223.

IDC developer toolkits

Innovative Data Concepts has announced a user interface development package that enables the writing of 32-bit applications for both OS/2 and Presentation Manager with one set of source code.

TCXL-OS/2 and TCXL/PM work together to provide developers an easy way to bring their DOS and Windows applications to the OS/2 2.0 operating environment.

IDC is also introducing five other OS/2 2.0 toolkits, for compression, file management, printer control, editing and advanced utilities.

Innovative Data Concepts, Inc., 122 North York Rd., Suite 5, Hatboro, PA 19040, (215) 443-9705.

RPG Debugger

Developers can use the BABY/4XX RPG/400 interactive debugger, running under OS/2, to rapidly debug and implement RPG/400 programs on a PC.

With the debugger the computer screen becomes a set of five windows that show various facets of the program. The interactive windows include the source program window, the field viewer window, the name selector window, the

indicator windows and the line selector window. Manipulating the source program through these windows is a key usability feature of the RPG interactive debugger.

California Software Products, Inc., 525 N. Cabrillo Park Dr., Santa Ana, CA 92701-5017, (714) 973-0440.

Hocus Focus

Hocus Focus is an OS/2 window manager that provides single-click access to the windows on the desktop. Once Hocus Focus has captured a

window, you can minimize it or cover it with other windows, then use Hocus Focus to bring it into focus or close it. In essence, the program acts as a graphical replacement for the text-based Window List.

The Hocus Focus Icon window is where all of the icons for the captured windows are stored. Place your mouse pointer over any icon and Hocus Focus will display the text associated with that icon in the display window.

Pinnacle Technology, 1017 W. Ocala, Broken Arrow,

OK 74011, (918) 455-2520.

LAN File Distribution System

Conduit is an OS/2-based LAN file distribution system for OS/2 and DOS administrators and clients. By automating such tasks as installation, upgrades, version control and license supervision, Conduit can take the tedium out of desktop management.

Some other capabilities of Conduit are providing security safeguards with identification

and passwords, creating directories, remote execution of programs, developing profiles and maintaining inventory data. Daily virus scanning is another option.

Conduit is available for \$299 per server, regardless of the number of clients.

Client Server Networking Inc., P.O. Box 370111, West Hartford, CT 06137-0111, (203) 233-2951.

News

DeScribe releases new version

DeScribe is now shipping Revision C, the latest update of the only full-featured native OS/2 word processor, DeScribe, 4.0 SE. Revision C's new enhancements include custom icon tools, bubble help, and two-up printing. DeScribe 4.0 SE, which is not omnipresent at the retail level, can be purchased at Programmers Paradise, the Programmers Shop, the Computer Buyer's Club and through IBM's 800 purchasing line, (800) 3IBM-OS2.

WordPerfect ships 5.2

Sources at WordPerfect say that their ported version, 5.2 for OS/2, should be ready to ship in time for Spring COMDEX. The interim version is intended to pre-estab-

lish the word processing software in the OS/2 market. Toward the end of the year, the firm expects 6.0 to be completely OS/2 ready.

IV League goes international

IBM's Independent Vendor League has gone global to expand the worldwide proliferation of OS/2. The association of more than 250 authors, publishers, trainers, developers and experts helps spread the word about OS/2. The IV League launched its international program earlier this year with a tour in Asia, the South Pacific and Canada. Expansion into Europe, the Middle East and Africa is now underway, according to IV League sources. The organization targets Latin America after that. Gail Ostrow, of the IV League, has established an information line at (203) 262-5351.

Lotus suite may bundle

Lotus Development Corp., in February, began shipping 32-bit Lotus 1-2-3 2.0 and Freelance Graphics 2.0 for OS/2. This represents half of Lotus' four-program SmartSuite, which also includes: Mail for OS/2 (expected for this quarter) and Ami Pro. According to Jim Burnham, senior product marketing manager for OS/2, Ami Pro version 3.0 for OS/2 was set to start beta testing during February. No firm ship date has been announced. Other sources say that a release during the first half of 1993 is very likely. Burnham also confirmed that Lotus is engaged in active discussions regarding a possible bundling of Lotus products with IBM OS/2. No details on what form that might take were available, however.

It's KASEWORKS

CASEWORKS, Inc., a developer of mission-critical client server and GUI application development tools, recently changed the company name to KASEWORKS, Inc.

The change aligns the company name with the patented KASE (Knowledge Assisted Software Engineering) technology on which all KASEWORKS products operate. It differentiates the company from Computer Aided Software Engineering (CASE) vendors, who produce CASE tools for diagramming and modeling of information systems. It also emphasizes the company's migration from GUI development solutions into client/server tools. ♦

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A Backup Solution: Colorado's Jumbo 250

BY BRADLEY KLIEWER

Maintaining an effective backup and recovery strategy is one of the biggest challenges facing the OS/2 user. The days of diskette-based flop n' swap have gone the way of 30 MB hard disks and 286 computing. A backup system must be simple and convenient, or most people won't use it. Equally important is price. If a system is too pricy, many just won't purchase a backup system.

Colorado Memory System's answer to the dilemma is the Jumbo 250. Although it does not ship with OS/2 compatible software, CMS offers a specially adapted version of Sytos Plus for the Jumbo 250. This QIC-80 (mini-cartridge) internal tape drive requires an empty half slot and connects to the diskette controller in your system. CMS claims a 250 MB capacity for the Jumbo 250. However, the actual capacity is closer to 120 MB. The 250 MB figure is attained through data compression.

Our testing platform for the Jumbo 250 was a Northgate 486/33 with 8 MB RAM and a 210 MB hard disk. A complete backup of the drive nearly filled a single cartridge because I tend to archive infrequently accessed data in .ZIP files. Since these archives have already been compressed, the Sytos/Colorado compression algorithms have little effect. Likewise, you shouldn't expect a nearly full 200 MB drive using a compression program like Stacker or DCF/2 to fit on a single cartridge.

If the tape does fill, Sytos simply prompts for the next cartridge in the series and picks up where it left off. If you set the Sytos Plus scheduler to run backups overnight, you will need to complete the task in the morning when you return to work. Thanks to OS/2's multitasking, this is not terribly disruptive although you might find the whine of the tape drive disturbing.

This limited storage capacity is one of the few disadvantages mini-cartridges have over their larger, older, full-sized siblings; 125-250 MB is well matched to most stand-alone OS/2 systems, but falls short on networks and high capacity systems (such as

those running large database or desktop publishing applications).

Unlike full-sized cartridge systems, which format on the fly, mini-cartridges require formatting: a process which can take nearly two hours. CMS includes preformatted tapes with the Jumbo 250. Preformatted tapes are readily available for just a few dollars more than unformatted tapes—well worth the convenience and time savings. In addition to the format-on-the-fly feature, the large format drives also have an immediate read-after-write feature that improves reliability.

In theory, the data throughput to minitapes is slower than to large format tapes. But high throughput gives little advantage if the backup system outpaces other components such as disk drives or network data transfer rates. And, in a multitasking environment, tape throughput is not always an overriding concern. Should you not be satisfied with the data transfer rates, CMS makes a special controller (the FC-10) that doubles the rate from 500 Kb/sec to 1 Mb/sec. When I installed the FC-10, actual throughput increased from the 2-4 MB/min range to the 4-6 MB/min range.

With the QIC-80 format, what you lose in capacity and convenience, you gain in price savings. A CMS 1.2 GB PowerTape lists for \$1,295—\$1,000 more than the Jumbo 250. Indeed, thanks to its low price, you should consider the Jumbo 250 as a standard component on new system orders (and a worthwhile add-on to older systems). There is one caveat, however. While testing the Jumbo 250 with Sytos I experienced two problems. One backup appeared to run completely and accurately, but at restoration time the tape was unreadable.

Jumbo 250 Tape Backup System

Colorado Memory
Systems, Inc.
800 S. Taft Ave.
Loveland, CO 80537
(800) 451-0897
FAX: (303) 667-0997

LIST PRICE:

Jumbo 250: \$279
Sytos 1.36 for the Jumbo
250: \$99
FC-10 controller: \$129



If you are building or maintaining OS/2 Presentation Manager applications, you will appreciate the rich functionality and features available in AutoTester, Inc's new Graphical User Interface Testing Programs.

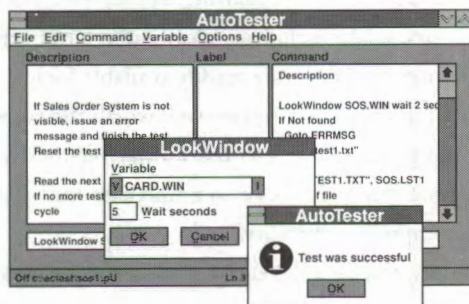
Create and Maintain Tests Easily

Building test cases with the new AutoTester GUI products is quick and easy. AutoTester's structured, menu-driven approach is faster and more accurate than manual or programmed methods.

AutoTester provides a powerful command set which solves the complex problems inherent in testing dynamic windowing environments. AutoTester can emulate mouse movements, keystrokes or system commands.

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Circle #25

HARD DRIVE

(See the Sytos review in DOT EXE.)

On another occasion, Sytos reported a hardware error while writing to tape. A CMS official confirmed that there have been a few problems with some hardware configurations and CMS is working closely with Sytron (the makers of Sytos) to improve reliability further. A revised version of Sytos for the Jumbo 250 should be available shortly. In the meantime, prudent use of post-back-up compares, tape rotation (using multiple tapes over a cycle of weeks or months) and log monitoring can help avoid a costly mistake should a single backup attempt fail.

The Jumbo 250 represents a good value if you can live within the confines of its limited capacity (and for most current configurations, this should not present a problem). ♦

Bradley Klierer is the Editor of OS/2 Professional.

INPUT

continued from page 86

it was with an OS/2 user who had not attained my level of expertise.

Your magazine is interesting, but it may be moot.

Saulius J. Skeivys, MD
Bayside, NY

Dvorak degrading

How dare John Dvorak suggest in his article, "The OS/2 Manifesto," [Dvorak's View, January] to liven up the defaults "showing Cindy Crawford naked"! Mr. Dvorak, your degrading comments about women are an insult to women and those of us who refuse to put up with such outright stupidity. Keep your comments to OS/2! This is a professional journal, as per the title, so how could the editing staff allow such a statement?

Douglas Troyer
New York, NY

Zachmann's view

In "Inside the Anti-OS/2 Conspiracy" (December 8, 1992, *PC Magazine*) Jim Seymour flatly denies allegations from readers that *PC Magazine* is strongly biased against OS/2 and tilted in favour of Windows. In the same issue, William F. Zachmann (just about the only guy at *PC Magazine* who writes sensibly about OS/2) delivers his next-to-last column. At about the same time, Zachmann joins the ranks of *OS/2 Professional*, an independent publication for OS/2 professionals, as contributing writer. Curiously enough, his first article "OS/2 vs. the Media" [Professional View, November 1992], and which I urge all to read, is a direct and poignant attack against magazines on this issue. Is all this mere coincidence? ♦

Fredric D. Portoraro
Toronto, ONT

continued from page 21

water cooler" memo. In fact, Akers never even wrote the memo! It was written by IBM Canada Branch Manager Brent Henderson after a staff meeting with a riled Akers. Henderson posted his memo summarizing Akers' complaints on an internal IBM forum. Whittle wrote a searing rebuttal, declaring openly what no one dared say: that Akers himself should bear the responsibility for IBM's problems and not just point fingers. Whittle wrote, "...If he [Akers] won't take the responsibility for the empty politics and do-nothing performance of middle management, then who should?" Was this a catalyst to Akers' recent departure? Who knows. By the way, look for a new book from Dave Whittle and *OS/2 Professional* columnist John C. Dvorak on OS/2 2.1.

IBM'S NEW POINT WOMAN

IBM's new point woman in advertising is Joanne Maleski. Maleski will be part of a two-person point team, along with Keith Lindenburg, who will report what's hot and what's not to IBM marketing vice president John Patrick. The outspoken roll-up-her sleeves Maleski is expected to run things differently than her predecessor. She's a do-er who has no patience for people who can't make a decision. Translation: watch for her to make a mark—and butt heads doing it.

OS/2 LIFESTYLES

And now for those intrigued by and subscribing to the "OS/2 Lifestyle" promulgated in our inaugural issue Publisher Memo, take heart. The bulletin boards have been buzzing with questions from hopeful lifestyleers, and answers by those who know they have arrived. One of the most interesting was punched by Dean Stacey, who gave us an explanation worthy of the *David Letterman Show*. Dean Stacey offered "The Top Ten Signs That You're Living the OS/2 Lifestyle."

10. People in restaurants badger you for your autograph.

9. Monkeys, Monkeys, Monkeys!
8. Pizza has never tasted better.
7. New software arrives daily via UPS.
6. PC so smart it now turns itself on.
5. Those damn *paparazzi*!
4. CompuServe gives you a "Golden Modem" award.

3. Old XT used for doorstep in garage.
 2. You have convinced spouse "we" need a CD-ROM drive.
- And the number 1 sign...
1. You're beginning to prune from spending too much time in the hot tub. ♦

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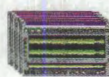
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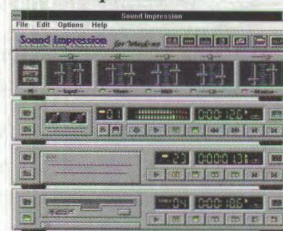
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Circle #8

Object Computing and the Importance of OS/2

We are at an important juncture in the history of PCs. New power in hardware, as well as operating system and application software are providing capabilities previously found only on high-end workstations. OS/2 is leading to exciting opportunities for new applications on the desktop.

Borland is very excited about the new capabilities of OS/2, and is committed to the 32-bit future. In fact, we are very proud of our new, fourth generation, object-oriented C++ compiler, Borland C++ for OS/2. With its fully Presentation Manager hosted development environment, integrated GUI debugger and world standard C++ implementation, it will set the stage for application development on OS/2.

OS/2 is the first mass market 32-bit operating system for PCs. It is a truly robust, dependable environment with multitasking, multiple threads and huge memory capabilities. These advances are heralding a new world for the enterprise. And with it, new demands.

Object-oriented programming will make the transition successful. Whether an organization is downsizing, rightsizing, examining client/server issues or "simply" moving to the GUI environment, object computing is the key to success. Object-based applications will bring the power of computing to people everywhere by improving their ability to use software and by enabling them to develop new applications easily.

The power of PC software applications is growing exponentially, much like the increases in hardware power and performance. Likewise, the complexity of the programs developers are building is also increasing exponentially as developers strive to take maximum advantage of improved hardware power.

For example, an acceptable state-of-the-art piece of software in the '70s took 100,000 lines of code. Today, applications such as Quattro Pro for Windows are 1,000,000 lines of code.

Now, we all know that when you take a software engineer and have him work on his own, the number of lines of code that he can write in a year is far greater than if you immerse him in a team. The larger the team, the less individual productivity.

In order for the programmer to be able to keep pace, software development methodologies must change. This is where object-oriented programming comes in. Object-oriented development

methodologies deliver more reusable, more reliable, more extendable code.

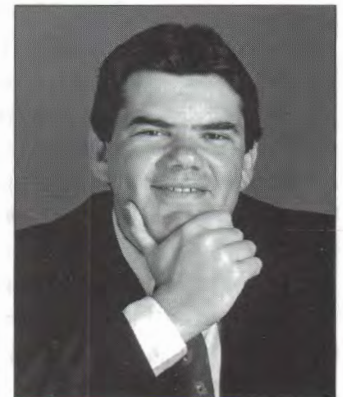
Products using an object-oriented model divide an application or part of an application into components which can be shared with other applications or across information systems for greater scalability, flexibility and efficiency. The code, or language, these products are written in is built as components. These blocks or "chunks" of code can then be reused in future applications. Building our software by components means our products are more reliable because these sections have already been tested. It also means that future versions are produced more quickly because we are adding new functionality to a stable code base.

While the first object-oriented project may take longer, code reusability more than counters the effect. For example, Quattro Pro for Windows saved 400,000 lines of code by using C++. That's a big gain for improving time to market.

Of course, object-oriented programming is also key for programming graphical user interfaces. An important step in improving usability and functionality is enabling users to directly interact with every aspect of a product's user interface. Instead of sifting through a complex maze of commands and pull-down menus, object-oriented applications enable users to directly interact with and manipulate every element or "object" on the screen. This direct interaction empowers the user, dramatically enhances the usability of the application and improves the user's productivity.

The power of object computing is what will put those applications there. Object computing will help customers manage and develop their applications and it will make computing's power accessible to all. Personal computing changed the way the people worked. Object computing will change the way the world works. It is the wave of the future and it is here today ♦

*Philippe Kahn
Borland International, Inc.*



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